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BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE
AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

Union-Management Cooperation in the Railway Industry

The Technique of Cooperation
—Otto S. Beyer, Jr.

Labor's Appraisal
—Bert M. Jewell

Management's Appraisal
—Sir Henry Worth Thornton

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Engineering Societies Building
29 W. Thirty-Ninth St.
New York

FEBRUARY, 1926 VOL. XI, NO. 1

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Comment

INTEREST in the problem of industrial relations—and particularly in the experiment in union-management cooperation on the railways—was manifest at the meeting of February 5 held in the Engineering Societies Building, New York City. The main floor of the auditorium was comfortably filled, notwithstanding the fact that on that evening urban and suburban transportation was severely disorganized by an unusual fall of snow, and only meetings of exceptional interest could induce people to face the problem of finding a way home after an evening session.

FOR cooperation in the organization and conduct of this meeting the Taylor Society is indebted to several other associations: to the Metropolitan Section of the A. S. M. E., the New York Railroad Club, the Management Division of the A. S. M. E., the New York Chapter of the S. I. E., and the New York Metropolitan Section of the Taylor Society. And all of these cooperating associations are indebted to Mr. Frederick H. Ecker, Vice-President of the Metropolitan Life Insurance Company and President of the Chamber of Commerce of the State of New York, who not only presided at the meeting but also entertained the speakers of the evening as guests of honor at a private dinner at the Engineers' Club preceding the meeting.

OTHER guests at this dinner were: Arthur W. Anderson, representing J. P. Morgan & Company; Clarence M. Clark and Edward W. Clark 3rd, representing E. W. Clark & Company, Philadelphia; Morris L. Cooke, Consulting Engineer; Hugh Frayne, General Organizer, American Federation of Labor; Haley Fiske, President of the Metropolitan Life Insurance Company; Charles W. Galloway, Vice-President of the Baltimore & Ohio Railroad; Jerome J. Hanauer, representing Kuhn, Loeb & Company; Darwin P. Kingsley, President of the New York Life Insurance Company; Francis Lee Stuart, Consulting Engineer; Frank C. Wright, representing Lee, Higginson & Company; and Roy V. Wright, Editor of *Railway Age*. In the audience at the meeting were many other representatives of financial and investment interests, of managements and craft organizations of the railroads centering in New York City, of managements and labor organizations of other industries than transportation, and of the engineering profession. From the point of view of variety of industries and of variety of administrative responsibilities, this was unquestionably as representative an audience as ever attended a management meeting.

THE purpose of the meeting was to put on record a noteworthy case of management-labor cooperation in managing and promoting the interests of a great enterprise, with avoidance of emphasis of collateral controversial aspects of the case. We believe this purpose was achieved. To be sure, the opening paragraphs of the first address did present, as "basic requirements" to effective cooperation, certain propositions which, had there been immediate general discussion from the floor, might have induced a controversial element into the meeting. But these propositions were presented as generalizations of the author having a bearing on the subject of technique, were stated briefly, and were not repeatedly referred to and otherwise emphasized in the course of the evening; and there was not general discussion from the floor. A reading of the papers printed in this issue will convince one that the case was presented in that dispassionate manner to be expected of speakers of such distinction and responsibility.

THE reactions of the audience which have come to us directly indicate a general judgment that not only is the cooperative experiment impressive in its spirit but it is also becoming impressive in its results. There is, for instance, significance in the statement of Mr. Jewell that "minor grievance cases on the Baltimore and Ohio and the Canadian National have been more than cut in two, and as for appeal cases—those which are not settled locally on the ground where they originate—these have been reduced by approximately 75 per cent"; in the statement of Captain Beyer that since the beginning of the cooperative movement in the spring of 1923, some 14,000 propositions concerning operating conditions and methods, most of them originating in the ranks of labor, have been handled by representatives of the shopmen, and that of these over 11,000 have been approved and put in practice; and in Sir Henry Thornton's declaration that the Canadian National is definitely and irrevocably committed to the principle of cooperation with employees. The four statements printed in this issue, by a specialist student of railroad problems, an executive of an insurance company, an engineer and an economist, are typical of the great majority of appraisals which have come to us.

ON the other hand, some of the audience were not so favorably impressed, according to an editorial in the February 13 issue of *Railway Age*. We quote at length from that editorial: "The Taylor Society and the cooperating organizations . . . . have done a real service in attempting to have an authoritative statement of the principles and benefits of this plan placed on record in a dignified, detached and scientific atmosphere . . . . . Judging from the expression of several of the (engineers and economists), it is doubtful whether this group as a whole was very greatly impressed by the extent of the practical results thus far obtained, as outlined by the different speakers, although there is no question but that they recognized the value of the spirit of the movement . . . . . The benefits, while logically presented and in the utmost sincerity, cited a minimum of concrete results which without question can be credited to the cooperative movement, or rather are not being obtained on other roads under other forms of a cooperative endeavor . . . The railroad shop crafts are to be commended for retaining an expert to advise them as to how to cooperate with management in eliminating waste and increasing production. Undoubtedly this has produced real and tangible results for both the men and the managements. The fact must not be overlooked, however, that those workers and managements which prefer 'employee representation' have also been making progress, although this development, like union-management cooperation, is yet largely in the experimental stage in various forms on different railroads . . . We are in a new era and managements and workers generally are recognizing the fact that their interests are mutual and that they must cooperate in their own best interests . . . The problem of improving human relationships in the railway industry is a big one and unquestionably the union-management cooperation program is a significant attempt at its solution. But others are approaching the same problem with equal sincerity but with a somewhat different technique . . . The problem is difficult enough to merit much varied study and experiment . . The more ways it is approached the better . . ."

RESPONSE to this editorial appeared in an editorial of the March issue of *The American Federationist*. "The *Railway Age* in a lengthy editorial on the whole discussion sought to belittle the principle (that unions are essential to the success of cooperation) . . . Cooperation has been a word that many have invoked to gain favor for all kinds of proposals, but to have real cooperation it is necessary to make sure of technique as well as objective. Essential to the whole development is organization of workers to provide ways and means by which their experiences and views may be presented in discussion of work problems and help develop unity of understanding and purpose. The presentation of the development made plain that independent association of workers into organizations of their own making is necessary for achieving the spirit and the purpose of cooperation. No substitute can serve this purpose. The success of the method depends on the degree with which it brings the release of creative work from each person in the whole group. The trade union is the only agency which workers have developed to serve their needs. It is the only agency which they control and consequently it is the only agency which they fully trust. In a conflict of opinions with management, only an independent agency can maintain the contentions of wage earners. Whether in maintaining their rights or expressing their views on production problems or technical change, if the workers are to make their real contribution they must be free to speak their minds and contend for their position. For example, trade unions helped scientific management to correct early mistakes by refusing to permit men and women to be treated as mechanical machinery. Scientific management learned it was necessary to understand human nature and to work with it instead of against it. Consent is necessary to cooperation—cooperation implies volition, not passive non-resistance. Obviously employee representation plans drafted by management are essentially different from trade unions. The trade union is a natural outgrowth from the experience and ideals of those concerned. It is the creation of the workers, while the employee representation plan originates with another party, interested from another point of view."

Catching Up with the Ants

THE occasion was beyond praise. The conception was thrilling and the treatment of the subject by the speakers matched the conception in sanity, understanding and vision. Too often it has been true that the ants on their anthills have attained higher team play than man with all his boasted devices of "civilization." This is a most commendable endeavor to catch up with the civilization of the ants. Neither men nor managements need lose one iota of their militant reserve power, while each will tremendously entrench itself in the understanding of the other by devoting its organized strength to the problems that are common to both, and in this way enhancing the wealth of each.

J. SHIRLEY EATON.[1]

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[1] Railway specialist, Morsemere, N. J.

Raising the Plane of Industrial Relations Discussion

THE February fifth meeting of the Taylor Society on Union-Management Cooperation impressed me as the most significant meeting on industrial relations in this country since the President's Conference on Unemployment.

As a contribution to the art of business administration, union-management cooperation is important because it provides a much needed method for encouraging good production and workmanship in that extensive field within which the individual performances of wage earners cannot be readily measured. It is well known that individual rewards and penalties are effective instruments for stimulating efficiency only when the performance of individual workmen can be ascertained. It is not, however, generally appreciated how large is the area within which individual efficiency cannot be easily discovered. Union-management cooperation has made the important discovery that the trade union, because of its peculiar ability to command the confidence of workmen, can be used to encourage efficiency in the large field where individual performance cannot be inexpensively measured.

The full significance of the meeting of the Taylor Society can be appreciated only when it is realized that, as Mr. Jewell pointed out, the proposal for cooperation originated, not with managements, *but with trade unions*. Organized labor has awakened to the fact that it is capable of rendering valuable assistance to managements and it is now demanding the opportunity to render that help—with the understanding, of course, that it will share equitably in the gains. This development in union policy is bound to raise anew the question of union recognition. Public opinion in this country has been tolerant of the employer who refused to deal with organized labor because the man in the street—rightly or wrongly—has felt that unions took insufficient interest in production and were too disposed to practice restrictive policies. If it now appears that unions are both able and willing to render substantial assistance to management in increasing output and reducing costs, the open shop employers of the country are likely to be faced with an ever more insistent demand that they recognize unions and accept their offer of cooperation. One of the outstanding features of the meeting was the frank recognition by Sir Henry Thornton that unionism is here to stay, that our problem is not how to get rid of it or to curb it but how to get along with it and benefit from it.

The successful operation of union-management cooperation requires more than the mere will to work together. It demands knowledge of how to deal with many specific problems which are bound to arise in connection with any plan. There is real danger that the movement will suffer mishaps because enthusiasts, more aware of the possibilities of cooperation than of its difficulties, will initiate experiments without sufficient study of the difficulties which must be surmounted. Against this danger Captain Beyer's paper on "The Technique of Cooperation" should be a warning. It deserves intensive study by managers, industrial engineers, and union officials who bear the responsibility for the successful operation of cooperative arrangements.

The Taylor Society is doing a notable work in raising the plane of discussion of industrial relations in the United States. The meeting on Union-Management Cooperation was a substantial contribution to this work.

SUMNER H. SLICHTER[2]

An Historic Occasion

As I sat listening to the papers and addresses at the joint meeting of the Taylor Society and the American Society of Mechanical Engineers on "Union-Management Cooperation in the Railway Industry," I felt that the occasion should be one of very great historical importance. I was much less concerned about the content of the papers than I was interested in the composition of the list of speakers.

The Chairman, F. H. Ecker, who is the President of the Chamber of Commerce of the State of New York—a very conservative body of business men—happens also to be a chief executive of the largest investor in railway securities in the United States and is himself an authority on the subject of railroad securities. His presence at the meeting as Chairman was, therefore, of very great significance from several angles, and none of greater importance than indicating that the time has come when business men realize that industry requires not only the enterprise of investors and the intelligence of management, but the organized intelligence and thinking cooperation of labor.

The broad-minded statements of Sir Henry Thornton regarding the right relationship of employer to employee were gratifyingly in harmony with sound present day thought, but of more importance was his expressed belief that the intelligence of labor could be mobilized in a systematic and sustained way to promote the success of an industry.

Mr. Beyer's exposition of the plan and method he has used in the development of the actual practice of cooperation on several railroads is always immensely interesting to me, but there again the significance of his appearance was rather to emphasize the fact which is new, namely, that organized labor is employing professionally a technically equipped engineer to facilitate its relations with its employers and to guide the extra, organized contribution which it is prepared to make to the success of the business. At last!

And then Mr. Jewell, speaking for his unions, said things which though sensational were so only because they are now being uttered for the first time. He spoke of the readiness of labor to identify itself with the fortunes of a business to the extent of seeking with every resource available to it to contribute to its stability, economy of operation and prosperity.

Little emphasis was given throughout the meeting to the rewards that would come from this cooperation either to management or labor, but they are clear enough provided that the relationship upon which the cooperation is based is truly a mutual one and that there is indeed the belief that labor can give much besides the routine performance of its assigned tasks.

The meeting will become historical, I thought, if labor will increasingly realize that its combined strength, no matter how mobilized, in what units or where, need not be reserved to coerce employers to grant concessions, but should be, must be, used to demonstrate capacity to increase production by organizing to produce and to cooperate.

The occasion will be historical, I thought, if employers in the railroads and without recognize that encouragement to labor to understand the problems of management, sustained efforts to get labor to participate in their handling and means to permit labor to share in the rewards of the more skilful discharge of business are purposes that are worth the best of ability and zeal, such as was so splendidly exemplified by the statements of Sir Henry Thornton and proved by his action and that of Mr. Willard of the Baltimore and Ohio.

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[2] Cornell University and the Institute of Economics.

All in all, the meeting was an occasion of which the engineers have a very great right to be proud because it remained for an engineer with judgment, capacity and sympathy, to link together the two forces in industry on a non-sentimental, practical, constructive platform of active cooperation.

What an astonishing thing it is that labor should have so long waited to discover in itself this extraordinary power, much greater than the persuasive force of numbers or public opinion! There is no resource equal to the undeveloped capacity of labor to think and act cooperatively and constructively with management for the good of industry and the contributing factors in industry. It was a great occasion.

HENRY BRUÈRE[3]

What the Record Promises

THE human being endowed with a mind has inherently a desire to improve his position in the world. Unionism is a modern collective expression of such a feeling.

Twenty years ago we wondered why that desire was not an asset instead of a liability to industry, and regularly the answer came in the shape of a strike or eruption of primitive struggles for the mere existence of a union.

Education, time and the war have now stabilized the unions, as such, and the activities of minds and body which are necessary to foster and hold a group of men together for any purpose have been able to go afield for constructive objectives.

The methods and results in union-management cooperative effort in the railroad mechanical department—so ably worked out by labor and management on the Baltimore and Ohio Railroad and recorded and approved so impressively by the speakers of the evening—are noteworthy and most interesting. This meeting confirms the possibility of mutual helpfulness by unions and management cooperation which many knew existed in the situation but could not help to develop until labor itself voluntarily sought such a constructive solution.

The record made of technique and results should be most encouraging to capital, for it points a way to stabilize our prosperity. Our prosperity, progress, and the high standard of living which we maintained during the past generation in competition with the rest of the world was due in large part to inventions and machinery and in spite of occasional industrial strife. If union-management cooperation is as effective as it promises to be, then that impulse behind our industries and constructive methods will insure our taking still greater steps forward during the next generation.

The responsibility lies first with capital to have the patience and desire to work for cooperation, believe in it and go across the middle of the road to meet it; and second, with labor unions to have the whole hearted desire to make their efforts continually helpful to all concerned.

Capital's part is a state of mind transmitted into action through management.

Labor's part is more difficult, more trying and requires a high order of intelligence. The men have got to work together, have common ideals and objectives, be amenable to certain discipline which should be administered by themselves rather than by management, have a democratic ladder up to leadership, from small units to larger responsibilities—all of which is impossible effectively without a closely knit collective effort of employees such as is possible with a company or national labor union. Their major ambition should be to make the union an asset rather than a liability to the industry, expecting with justice continuity of employment and their share of prosperity.

The greatest difficulty which management and labor have to meet, assuming both desire a fair return from the cooperative movement, is to keep up their interest and effort. Almost any movement can be kept up for a week, or a month, or a year, but to become effective for a generation requires a habit of thought, education, measurable result, and effort by both parties to satisfy the mental and physical necessity of the coworkers.

From an engineer's standpoint the result in sight in the case recorded is well worth the effort and by example should encourage many other earnest endeavors to improve human relationships.

FRANCIS LEE STUART[4]

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[3] Third Vice-President, Metropolitan Life Insurance Company, New York.

[4] Consulting Engineer, New York.

Union-Management Cooperation in the Railway Industry[1]

A Case Presentation of Effort Towards Stabilization

I. By OTTO S. BEYER, Jr.
Consulting Engineer

II. By BERT M. JEWELL
President, Railway Employees Department
American Federation of Labor

III. By SIR HENRY WORTH THORNTON, K. B. E.
Chairman of the Board of Directors and President
Canadian National Railways

Introductory Remarks of
Frederick H. Ecker[2], Presiding

THE associated societies under whose auspices you have gathered here extend to you a cordial welcome. Your response to their invitation is most gratifying; owing to this unusual weather, even for New York, and the extent to which this storm has doubtless prevented many from coming who would otherwise have been here, perhaps I should say with more emphasis than I should otherwise that your presence testifies to the importance of this meeting.

The full significance of the meeting must, perhaps, come in retrospect, but we know in advance that it is significant in at least two respects.

In the first place, it is to be the first complete and authoritative statement of the ideals, methods and results of a great experiment in labor-management cooperation—an experiment under way on four great railroad systems, the Baltimore & Ohio, the Canadian National, the Chicago & Northwestern, and the Chesapeake and Ohio systems. Involved directly are 40,000 miles of Class 1 carriers, and 45,000 employees; and indirectly, the families of these employees, the business affairs of the communities in which they live and through which the roads operate, and the great financial interests concerned. The facts to be recorded here by men of authority and distinction are of significance to all American industry.

In the second place, the spirit in which this meeting is held is of even greater significance. It is the spirit of cooperation; it is the spirit of social service; it is the spirit of engineering science. Prejudices and controversies have been laid aside, and representatives of two great functional industrial groups have come together "to consider," in the words of the representative of labor, "in a dignified, detached and scientific atmosphere, the first organized steps in the actual realization" of certain ideals.

At the recent Atlantic City convention of the American Federation of Labor certain resolutions were passed which attracted world-wide attention; resolutions which in effect declared that labor is ready to cooperate with ownership and management in eliminating waste in industry and generally in improving and regularizing industrial operations. At a meeting of the Taylor Society in December, William Green, President of the American Federation of Labor, in a noteworthy address reiterated the spirit of those resolutions. We regret that prior official engagements have deprived us of Mr. Green's presence on this platform, but he is ably represented. Now comes this meeting at which in calm, dispassionate and engineering research manner, the facts of a great cooperative effort to give expression to the spirit of those resolutions are to be put on record.

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[1] Papers presented at a joint meeting of the Taylor Society and the Metropolitan Section of the American Society of Mechanical Engineers, New York, February 5, 1926, with the New York Railroad Club, The Management Division of the American Society of Mechanical Engineers, The New York Chapter of the Society of Industrial Engineers and The New York Metropolitan Section of the Taylor Society cooperating.

[2] Vice-President of the Metropolitan Life Insurance Company and President of the Chamber of Commerce of the State of New York.

I. The Technique of Cooperation

By **OTTO S. BEYER, Jr.**
Consulting Engineer

Theory of Union-Management Cooperation

UNION-MANAGEMENT cooperation in the railroad industry must meet seven basic requirements. These are:

1. Full and cordial recognition of the standard unions as the properly accredited agents to represent railroad employees with management.
2. Acceptance by management of the standard unions as helpful, necessary and constructive in the conduct of the railroad industry.
3. Development between unions and management of written agreements governing wages, working conditions and the prompt and orderly adjustment of disputes.
4. Systematic cooperation between unions and management for improved railroad service and elimination of waste.
5. Stabilization of employment.
6. Measuring, visualizing and sharing fairly the gains of cooperation.
7. Perfection of definite joint union-management administrative machinery to promote cooperative effort.

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Necessity for Union Organization and Collective Bargaining

The necessity for the first three requirements arises from the fact that before employees can cooperate on a collective basis with management, they must be united in an organization which can give effect to their collective desires and functions. Obviously when the relationship between employees and company is simply on an individual contractual basis so that wages, conditions of work and hours of employment are strictly a private matter between each employee and the company, there is little if any basis for organized employee cooperation with management.

The situation in the case of employees functioning under "employees' representation" or "company union" plans is not much better. Such plans either have been brought into being by management or exist by sufferance of management. Employees organized under these plans have had little or no training in overcoming obstacles and do not enjoy the support of affiliated workers and organizations in other industries. Hence, their organizations lack the capacity, experience, discipline, leadership and power of initiative to mobilize the collective faculties of their members to cooperate effectively with management. Their unwillingness or inability to organize themselves independently and win recognition for their independent organizations attests to their basic incapacity to build the very foundation upon which cooperative effort must rest. Furthermore, without independent leadership and without the assurance that their organizations will safeguard for them their share of the gains of cooperation, company union employees can have no confidence in the company union type of organization. They cannot be sufficiently encouraged and will not feel properly inspired to participate enthusiastically in a program of cooperation.

Thus it is that the requirements of employee organization are not adequately met until the standard unions of the railroad employees are properly recognized by management on the basis of genuine collective bargaining. Where this condition prevails there has come into being an organized relationship between management and employees which has usually been of slow and difficult growth. It has had to justify itself at each step of its development, both to management and to the workers. The roots of its existence go deep into the structure and tradition of the railroad and its personnel. In simple words, where real collective bargaining exists, it has come to mean a great deal to both railroad officer and employee. It has come to be an integral part of railroad administration.

With the gradual establishment of collective bargaining has come also the development of leadership on the part of the organized employees. The necessity for conferring with representatives of management has imposed the necessity of selecting men with definite ability to represent the employees. Collective bargaining has precipitated distinct types of local union organizations with business-like ways for carrying on their activities such as holding meetings, electing officers, raising funds, extending organization and promoting education. A well perfected body of rules, regulations, laws, traditions and policies has been developed to guide the unionized railroad employee in many of his activities. All this has been a spontaneous and sometimes awkward growth, not always sensitive to or considerate of requirements of polite society. But it has been very real.

Similarly, with respect to the machinery of collective bargaining. Here too, where the standard unions are properly recognized, a body of rules, regulations, decisions and interpretations has been built up by representatives of unions and management for guidance in the adjustment of labor questions and disputes. And what is perhaps of greater importance than the written word governing this relationship is the personnel with its faculty for compromise and adjustment which both management and unions have jointly perfected for the administration of collective bargaining.

So, in general, it follows that the full and cordial recognition of the standard railroad unions, their acceptance by management as necessary, helpful and constructive, together with agreements governing wages, working conditions and the prompt and orderly adjustment of disputes comprise the three requirements for real employee cooperation with management. In fact, genuine collective bargaining is really the beginning of union-management cooperation. For under collective bargaining management accepts the cooperation of the voluntary unions of its employees and their spokesmen as the proper and responsible agents of the employees in the creation of industrial law, and the adjustment of all questions arising under this law.

Limitations of Collective Bargaining

The ordinary functioning of collective bargaining, however, when regarded from the viewpoint of labor's cooperation with management, reveals certain limitations. Its purpose is almost entirely defensive or protective as far as both railroad employees and management are concerned. It concerns itself only indirectly or negatively with the major purpose of railroad transportation, namely, service to the public. Its machinery comes into play only when employees and management want concessions from one another or when grievances arise. Over long periods of time the machinery of collective bargaining is dormant despite its usefulness in settling disputes. This idleness might well be considered a serious loss; its elimination provides the best available opportunity for real effective cooperation between railroad employees and management.

This opportunity consists of the widening of the scope of collective bargaining from that of a mutually defensive arrangement between railroad worker and manager to one which is constructive as well. In other words, instead of simply safeguarding wage rates and conditions of employment and providing for the orderly adjustment of grievances, collective bargaining paves the way for employee and officer jointly to consider and dispose of matters within their respective provinces which affect the welfare of the industry as a whole, as, for example, quality of service, elimination of waste, increased production and stabilization of employment.

In addition to the necessity for union recognition and collective bargaining as elements in a successful cooperative program, cooperation must have certain definite objectives, as outlined in the fourth, fifth and sixth requirements already mentioned. The first one of these objectives is agreement between unions and management to cooperate for improved railroad service, the elimination of waste and better operating efficiency. This objective is the justification for railroad management's and the public's acceptance of the standard unions as constructive factors in railroad operation, and so utilizing their help. On the other hand, improving working conditions, stabilizing employment and sharing the gains of cooperation constitute the economic justification for the employee and his union taking part in the cooperative program. Even should a railroad provide better service to its patrons or operate more to the satisfaction of management as a result of cooperation, the employee's interest in cooperation would not long endure if he did not secure tangible benefits from the program.

Necessity for Organized Cooperation

The final requirement which must be met if union-management cooperation is to be effective is the establishment of joint machinery of cooperation. This really means doing something practical by way of enabling the unions to function as constructive factors in the conduct of the railroad. To describe how organization for cooperative effort is effected, the matters such organization deals with, and how it deals with them is to outline the technique of cooperation.

Before proceeding to the detailed exposition of this technique it should be clearly understood that the machinery of cooperation does not replace but amplifies the organization which, under collective bargaining, has already been devised for the adjustment of grievances and wages. These matters are handled as they always have been. In fact, it has been found expedient to perfect still further the ordinary machinery of grievance and wage adjustment so as to expedite the settlement of these matters.

There is a very definite relation between the major departments of a railroad and the unions to which the employees of these departments belong. For example, all maintenance of equipment employees are eligible to membership in one or the other of the seven standard A. F. of L. shop craft unions. Membership in the Brotherhood organizations is confined to the employees in the transportation service. The general relationship between unions and departments has, of course, grown directly out of the very nature and structure of the railroad industry and its system of administration. It is primarily upon this relationship as a foundation that the organization for union-management cooperation is built.

Just as the orderly and efficient administration of collective bargaining requires machinery, rules and special personnel for its proper functioning, so does union-management cooperation. The equipment of union-management cooperation, since it is a normal development of collective bargaining, is in many respects the same as that of collective bargaining. In fact, collective bargaining and cooperation are so closely related and interdependent that the union machinery and personnel, such as lodge meetings, delegate body conferences, district, federation, departmental and international conventions, shop committees, paid representatives and officers are as indispensable to an enlarged program of cooperation as to the simple program of collective bargaining. And, since union-management cooperation imposes new and greater responsibilities upon these agencies of the union worker, the necessity for the greater perfection of these agencies becomes of increasing importance.

Machinery of Cooperation

Perhaps the best way to present a clear picture of how the machinery of cooperation must be organized to function properly is to tell how this has actually been done in the maintenance of equipment departments of some of the railroads where cooperation is now in effect. This requires a detailed description of the structures of both the organization and management of a typical railroad shop, as well as the shopmen's standard unions. The railroad shop selected for this description is a locomotive repair plant. The major departments of such a plant are the following: erecting shop, machine shop, air and steam appurtenance shop, boiler shop, blacksmith shop, pipe and sheet metal shop, tender shop, cab and paint shop, electrical shop, supply service, and administrative offices. In addition there are also several auxiliary departments or services: tool room, millwright or repair shop, general labor gang, and power house.

These various shops, departments and services in turn are composed of further subdivisions which finally are made up of definite unit organizations called either gangs, teams or groups. These unit organizations are in reality the basic production units of the shop. For example, the machine shop is divided into the rod and motion work shop, the wheel and box shop and the miscellaneous shop. The boiler shop is divided into the fire box shop, the laying out shop, the tank repair shop and the miscellaneous boiler work shop. Among the production units composing these sub-shops are the flue gang, the front end gang and the ash pan gang of the miscellaneous boiler work shop; the stay bolt gang of the fire box shop and the piston and crosshead gang and the link gang of the machine shop.

A production unit, as such, is organized around a specific job or a definite line of work on the same type of parts of each locomotive or car overhauled or manufactured. Thus, what really is found in a general locomotive repair shop is an aggregation of teams, each composed of one or more mechanics, apprentices and helpers turning out a specific portion of the aggregate shop output.

The management of such a shop is composed of foremen, general foremen of departments, assistant superintendents and a superintendent of shops. Auxiliary to the management is the general clerical force under the supervision of the chief clerk of the shop. Mention should also be made of the stores organization or supply service attached to every major locomotive and car repair shop which is under the jurisdiction of a local storekeeper and his staff of assistants.

Now the workers of a railroad shop fall into four classifications, substantially as follows: skilled mechanics, their apprentices, helpers, and laborers. There are also certain miscellaneous auxiliary workers such as clerks, storehouse attendants, crane operators, belt lacers and inspectors. The great bulk of the employees, however, fall into the first three groups. Thus for ordinary purposes the skilled mechanics, apprentices and helpers constitute the most important part of the human plant of the shop when judged from the viewpoint of craftsmanship, production and economy in the use of time and material. In other words, in proportion to the extent to which the individuals constituting these particular groups are concerned with shop efficiency and economy, will the highest standards of performance be approximated in the shop.

These three major groups of employees in turn also subdivide themselves into seven classes along distinct craft lines. These classes are: 1. machinists; 2. boilermakers; 3. blacksmiths; 4. sheet metal workers (tinners, copper smiths, pipe fitters, etc.); 5. carmen (locomotive carpenters, painters, and tender frame and truck repairmen); 6. electricians; and 7. firemen, oilers and shop laborers.

As a general proposition the subdivision of railroad shopmen along craft lines coincides with the division of the shop into its major departments. For instance, machinists are chiefly employed in the machine, air and steam appurtenance and erecting shops, boilermakers in the boiler shop and blacksmiths in the blacksmith shop. In the shop where the locomotives are stripped and assembled, sheet metal workers, boilermakers, electricians and carmen are also engaged, but each class is under separate and distinct supervision.

Thus it happens that a fairly close identity prevails in locomotive and car repair work in respect to the problems of the employees when regarded either from the craft shop or department viewpoint. This is an important fact to bear in mind in relation to the technique or cooperation.

Finally the employees constituting each one of the seven crafts are organized into local lodges which in turn are part and parcel of one of the following international unions affiliated with the American Federation of Labor: 1. International Association of Machinists; 2. International Brotherhood of Boilermakers, Iron Ship Builders and Helpers of America; 3. International Brotherhood of Blacksmiths, Drop Forgers and Helpers; . Sheet Metal Workers' International Association; 5. International Brotherhood of Electrical Workers; 6. Brotherhood Railway Carmen of America; and 7. International Brotherhood of Firemen and Oilers.

Each of the individual railroad lodges of these international unions annually elects its officers and various important committees, chief among them, the committee authorized to look after the interests of the men in the shop in their relations to the shop supervision and management. Usually, though not always, the member who is chosen as lodge president or chairman functions also as the chairman or chief spokesman of this important shop committee. Frequently some of the men who are selected for its other offices are also delegated to serve on this committee. Thus the most active and able men in the local unions are brought forward and thrust into positions of responsibility in respect to the affairs of their constituents, both as union men and as shop employees. At first, of course, the more simple characteristics of leadership bring these particular individuals to the fore, but as they learn through experience and contact with management, they soon improve their value to those for whom they speak. Confidence in their ability to conserve the welfare of the union workers in the shop grows on the part of the rank and file. Where unions exist and function and where they are accorded the status necessary under a program of union-management cooperation, the local union representatives are in a position of peculiar importance as far as the general morale of the shop is concerned. This is another important point to bear in mind.

In railroad shop service each one of the local lodges of the standard unions is, in turn, either part of, or affiliated with, three other bodies. The first of these is the local shop federation, which is concerned with the local intercraft problems of the men. The various officers of each local railroad lodge constitute the advisory councils of the local shop federation. The chairmen of the craft shop committees or the presidents of each lodge, one of whom is usually elected president of the local shop federation, constitute the local federated shop committee. This local federated shop committee, usually consisting of seven or eight men, is the highest local representative body of the shopmen obligated to confer with the local management on matters of mutual concern.

Local shop federations as a rule meet once a month. These meetings are either meetings of delegates from each lodge affiliated or meetings of all the shop employees of all crafts. As a rule each individual attending has a voice in these meetings. Voting on important matters, however, is by crafts or local lodges.

The second type of affiliated body of which each local craft is a member is the district, system craft council, or joint protective board. Such districts as a rule are confined to the railroad system where the craft in question enjoys recognition. For example, all the local machinist lodges of the International Association of Machinists on the Baltimore and Ohio Railroad are banded together in District Lodge 29, International Association of Machinists. These district lodges or joint protective boards meet annually in convention to determine upon general craft policies and also to elect in convention or by referendum a set of regular officers. Chief among these district officers is the chairman of the district. He is maintained out of the district craft treasury and is actively in the service of his craft representing its interests over the entire railroad system. So far as any particular craft as a whole is concerned on a railroad, he is its most important officer especially in respect to the railroad management.

Lastly, each local lodge directly and also by virtue of its shop federation and district affiliation is tied in with the system federation of all the crafts. This system federation is governed between annual conventions by its executive board, which is composed of the craft chairmen, a federation president, a federation vice-president and a federation secretary-treasurer. The executive board functions in respect to most matters of importance to the federation. Occasionally, however, the executive board may decide to convene the advisory council of the system federation to pass on important propositions. This advisory council consists of three representatives of the system organization of each craft, usually the system craft representative, the president and secretary-treasurer.

Annually, or biennially, the railroad system federation meets in convention, the delegates to the convention coming from each lodge of all the crafts and each local shop federation. This annual convention establishes the laws governing the federation, lays down general policies and elects the system federation officers. Aside from certain limitations in trade union law, the action of these conventions bearing upon the immediate relation of the shopmen to their respective managements is supreme and final. The system federation convention is the highest authority regulating the affairs of the federated shop crafts on a major railroad system.

It is particularly important to note the general structure of the voluntary organizations of the shop employees, how they grow squarely out of the rank and file, how they dovetail into the typical maintenance of equipment organization of the railroad and, finally, how the various representatives of the shopmen from the individual local committeemen to the system craft chairman, the system federation executive and advisory boards, the system federation president and secretary-treasurer and, finally, the President of the Railway Employees Department, must be the product of the shops, yards and roundhouses of the railroad industry. In other words, before anyone can become an officer, even in an unimportant capacity, in these organizations, he must first be a member of one of the local railroad lodges, which means that he must first enjoy employment in railroad service. Not until the organization, administration and functioning of the standard unions of the shop employees are properly and thoroughly understood, not until the structure of these unions is visualized in the light of the structure of the mechanical department organization of a typical railroad, can the far reaching possibilities of cooperation between management and unions be properly comprehended. It is chiefly because this union machinery is ready and at hand, having been devised, truly democratically, by the shopmen of the railroads, that the opportunity is available to allocate to this deeply rooted organism the added responsibility which genuine union-management cooperation implies.

The machinery of cooperation is based squarely on the organization and interrelation of the shopmen's unions. How this follows becomes clear from a consideration of the detail construction of this machinery. The first form it takes is that of regular joint local meetings between the local federated committee of the organized shopmen and a balanced committee of representatives of the shop management. The latter representatives are composed usually of such local officers as superintendent and assistant superintendent of shops or master mechanic, local storekeeper, chiefs in charge of auxiliary departments and foremen in charge of the major shop departments. The meetings of these committees are held at least every two weeks at a definitely appointed time in the office of the local officer in charge of the plant.

The next important part of the machinery consists of joint system cooperative conferences, the president and secretary of the system federation and the general chairman of each craft meeting with the head of the railroad's maintenance of equipment department, his department chiefs and assistants, and representatives of other departments, such as for example the service of supplies or stores department. These conferences on major railroad systems are held regularly every three months. Occasionally in cases of emergency, when problems arise involving the welfare of the shopmen or the railroad, experience has demonstrated the wisdom of convening the joint system cooperative conference to consider the situations precipitated by such an emergency.

Minutes[3] are kept of both the local and system meetings in keeping with a definitely prescribed form, each proposition submitted by representatives of either management or men being given a clearly recognizable designation. Copies of the local conference minutes are furnished to the local shop committee, are kept on file by the local shop management and are also sent to the secretary of the system federation and to the chief of the equipment maintenance department. Copies of the minutes of the regular trimonthly and special system cooperative meetings are furnished all representatives present as well as the various railroad officers concerned with carrying out the policies agreed upon at these cooperative conferences.

It is distinctly understood that these cooperative conferences are not for the consideration of grievances. The regular union machinery provided by the wage agreement which prevails between the system federation and the management continues to handle all these matters as in the past. The nature of the subjects discussed at the cooperative conferences, in keeping with the basic principle underlying them, are constructive in nature. Criticism, fault-finding, bargaining in the narrow sense of the term and the adjustment of disputes are handled in their proper places and at their proper times. Among the subjects which are customarily considered at these cooperative meetings are the following:

1. Job analysis and standardization;
2. Improving tools and equipment;
3. Proper storage, care and delivery of material;
4. Economical use of supplies and material;
5. Proper balancing of forces and work in shops;
6. Coordinating and scheduling of work through shops;
7. Training apprentices;
8. Recruiting new employees;
9. Improving quality of work;
10. Conditions of shops and shop grounds, especially in respect to heating, lighting, ventilation and safety;
11. Securing new business for the railroad;
12. Securing new work for the shops;
13. Measuring output; and
14. Stabilizing employment.

In general the local conferences confine themselves to local matters and the system conferences to system matters and such local problems as may be referred to them from time to time. A very definite agenda for the local or the system conference to follow is obviously not feasible. Common sense and the spirit of cooperation must be the chief guides in determining detailed conference procedure. The main object sought is for the duly accredited union representatives of the employees to confer with management in respect to matters in addition to those which they have been in the habit of considering in the past, matters in which they have as great if not a greater interest at stake than in their immediate hourly wage rates or detail working conditions. For in the end only in so far as the organized worker through his union can show that he contributes to the greater success of industry by means of helping to eliminate waste, does he enable industry to provide him a higher standard of living. At the same time he greatly strengthens his rightful claim upon the progressively improving benefits of industry.

With cooperative machinery, such as that described, available, it immediately becomes clear just how the proposals, ideas and suggestions of the shopmen are mobilized and receive consideration by the local and system cooperative conferences. Such proposals and ideas naturally come to life through the daily observations around the shops, benches and machines where the men are employed and are then referred to the local craft committee. The local shop committee of each craft frequently gets together at noon or some other time convenient to all in order to become acquainted with the various matters and suggestions referred to it. It has also proved desirable for individual members to bring their ideas to the lodge room for consideration during local lodge meetings, and subsequent reference to the proper committeeman for handling at the next cooperative meeting, provided, of course, the ideas submitted receive the endorsement of the lodge. In general, in getting important matters considered by the joint cooperative committees, the same procedure is followed as in the handling of grievances. Whenever the subject advanced is important enough, the lodge discusses it at its next meeting so that the union representatives to the joint cooperative meetings will have the full benefit of the experience and judgment of the lodge as a whole. In short, the regular union channels either functioning in the shop through direct contact between committeemen and the men or through the lodge by means of discussion from the floor are used in getting matters before the joint meetings for consideration. The importance of the proposal usually determines whether or not the local craft committee will refer the matter in point directly to the joint cooperative conference through the local craft representative or will first refer it to the local committee for discussion at the next lodge meeting, or even to the local shop federation meeting for action. It has been found that by following this procedure the ideas of everyone get fair and adequate consideration.

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[3] A typical set of minutes of a local cooperative committee is printed on page 20.

As a result of this procedure it will be noted that there is thrown into the conventional local lodge gathering a new matter of interest and discussion, turning chiefly around the job of the man, the way he works in the shops, his skill, craftsmanship and personal value to his union and the plant, all of which is of most intense interest and significance to the great bulk of organized workers. It is thus that the local lodge in addition to being an agency for protecting the immediate human welfare of its constituent members functions also as a technical and advisory organization in the actual operation of the plant in which its members are employed.

Typical Problems Met by Union Management Cooperation

Under a properly organized program of cooperation, management recognizes the necessity and accepts the responsibility for helping the employees and their unions to solve some of their problems. Likewise the employees recognize the necessity and propriety of helping management through their unions to solve some of management's problems. For the basic object of union-management cooperation is mutual helpfulness.

How this attitude of mutual helpfulness manifests itself in dealing with difficulties confronting men and management will perhaps be best illustrated by considering a few typical problems which have been dealt with under union-management cooperation Five such examples will be given.

Improving Conditions of Employment

Railroad employees naturally have a great interest in the conditions of employment with respect to safety, health, ventilation, lighting and sanitation. It is the employees and not the passengers, shippers or security holders who must spend a large part of their lives in railroad work. So in the last analysis it is of more concern to them than to any one else that conditions of employment should be satisfactory. It is also true that management is greatly assisted in accomplishing its purpose when these conditions are satisfactory. Ordinarily matters of safety, health and sanitation, when recognized officially by unions and management, are covered by some working rule. A typical example of such a rule is the following, taken from a regular agreement between the standard shopmen's unions and the management of a large railroad:

> Good drinking water and ice will be furnished.
>
> Sanitary fountains will be provided where necessary.
>
> Pits and floors, lockers, toilets and wash-rooms will be kept in good repair, and in clean, dry and sanitary condition. Shops, locker rooms and wash-rooms will be lighted and heated in the best manner possible consistent with the source of heat and light available at the point in question.

Obviously, this rule is quite elastic in its scope and permits of considerable latitude in its application by management, except in so far as the shop committees or the city and state health authorities insist upon the establishment of definite or standard conditions.

In consequence of the general nature of these and similar rules, the average shop committee, where union-management cooperation is not in effect, is forced into a position of protest in respect to correcting or improving conditions covered by these rules. In other words, all the committee can do is to launch a complaint or register a grievance when sanitary conditions are not satisfactory. The status of the committee becomes still more awkward when bad conditions develop which are not covered even in general terms by the working rules. Broadly speaking, it is bad for the morale of the service when the only method open to the employees for correcting unsatisfactory working conditions is by way of protest. It is this inherently unhealthy state of affairs in matters of this kind which the cooperative program corrects.

It does this simply by changing the function of the union representatives of the men from one of protest to one of advice, counsel and cooperation with management in effecting progressive betterments in this field. The regular joint union-management cooperative conferences enable both union and management representatives to bring up and consider what can be done to correct bad sanitary conditions, remedy lighting defects or provide, for example, safer and more satisfactory engine pits. The employees through their union committees play a constructive part, one requiring a higher degree of responsibility in dealing with these matters than when they are permitted only to complain about them.

That the opportunity for railroad employees to function constructively in this field along the lines of union-management cooperation is full of unusual possibilities is effectively demonstrated by the results of innumerable cooperative meetings, both local and system. Experience has shown that hardly a meeting is held at which one or more propositions are not discussed dealing with safety, sanitation, ventilation, or lighting. The interesting thing about it all is that agreement between union and management representatives is effected in the great bulk of cases considered and the necessary remedies or improvements are made with little delay. The fact is thus clearly revealed that it is usually as much to the interest of management as to employees to correct or improve these conditions. Good, safe, sanitary working conditions, in short, reflect themselves no less in the quantity and quality of the output than in the happiness and contentment of those who turn out the work.

Conserving Materials, Fuels and Supplies

This is a fruitful field of usefulness for union-management cooperation. The two major items of expense encountered in railroad operation are for materials and for labor. It has quite aptly been said that every dollar uselessly spent for material means a dollar wasted for labor. Stating it another way, every dollar saved in material means a dollar more available with which to meet the wage bill. Railroad employees have everything to gain and nothing to lose by helping conscientiously in the saving of railroad materials and fuel. When their unions and management are engaged in a cooperative program, they have the assurance that gains in material conservation will help to stabilize employment. In fact, improvements in material conservation are best applied to the stabilization of employment, since it is difficult to measure such improvements with sufficient accuracy to warrant sharing them financially with the employees.

No well-informed railroad employee or officer will deny that there are many opportunities to save material and fuel on railroads. And there is perhaps no direct item of expense over which the individual employee has as much control as the material item It is the task of organized union-management cooperation to educate and interest the employees in material conservation. The machinery of cooperation lends itself remarkably well to this purpose. It provides a new and effective channel for correlating in the mind of the average railroad worker the importance of saving material and his own personal welfare, especially as affecting the security of his job. If he does not do all he can to save material, he is increasing the likelihood for furloughs or short-time employment.

That union railroad workers will readily help to prevent material wastage has been strikingly demonstrated on several railroads where the cooperative program is in effect. An example taken from one shop will suffice to illustrate. In this case the "material shop expense" which is composed of the costs of small shop tools such as hand hammers, drills, and chisels, and supplies such as machine lubricants, emery, waste, and cutting compound was reduced from a monthly average of $14.08 per employee to $7.43. Similar saving in the major items of material used for repairs and manufacturing purposes have also been effected at many shop points where cooperation has been established. The ingenuity and the willingness of the employees combined with the active efforts of the local supervision and management to effect economies in this field of endeavor have in many instances resulted not only in more individual care being exercised in the direct use of materials and tools but also in the development of better methods for the control and disbursements of such materials and tools. In other words, under the impetus of union-management cooperation decided improvements in the entire material control and issue system have been made, so that the records reflect savings running into the hundreds of thousands of dollars.

Stabilization of Employment

Stabilization of employment in railroad service, especially in the maintenance branches, is one of the most important immediate steps in the program of union-management cooperation. There is perhaps no greater single factor militating against a wholesome interest on the part of industrial workers in some of the matters of basic concern to management than the fear of working themselves out of their jobs. If this fear can be allayed, if practical steps can be taken which will assure every employee that everything possible is being done to keep him employed, then the one greatest menace to cooperation between worker and manager will be removed.

And management no less than the worker and his union will share in the benefits of stabilized employment. In fact, management's benefits from this source are twofold. In the first place, steadier employment means steadier production, and hence more efficient plant utilization. Nothing affects the overall performance of any organization of railroad men, whether they be employed in the office or in the running or maintenance services, so much as repeated violent and apparently arbitrary increases and decreases in staff. It is not necessary to elaborate on the detailed reason for this. They are well known but their demoralizing effects are ofttimes inadequately appreciated by responsible railroad officers.

In the second place, workers in an environment of unstable employment cannot help but try to make the job last as long as possible. Not only do they do this instinctively, but they worry about what they will do for a living when their jobs come to an end. As a consequence, constructive enthusiastic interest in daily shop and road performance is difficult if not impossible. The morale of the organization is at a low level. All these degenerative tendencies disappear when work is steady. Gradually a more and more wholesome atmosphere is built up. This, though perhaps intangible, is as potent a factor in good service, high grade workmanship and efficient shop operation as any other factor.

Fortunately a great deal can be done to stabilize railroad employment especially in those branches of the service which have suffered most in the past. An important prerequisite to accomplishing this desirable end is the recognition of the phenomenon of unstable employment as a definite problem in railroad operation capable of progressive solution. But it is of still greater importance to accept the fact that the attempt to solve the problem is as worthy of serious and concerted effort as the attempt to remedy any other condition confronting either men or management. In short, stabilized employment in railroad service must be considered as important as stabilized interest on the funded debt. Stable returns on the legitimate financial investments in the railroad mean high financial credit. Stable employment means high labor credit, in other words, high service morale.

Some of the specific steps which have been taken to stabilize employment on several railroads will indicate what can be done under the auspices of union-management cooperation to guard against unemployment. Briefly, these steps may be listed as follows:

1. Systematic and scientific forecasting of revenues and budgeting of expenses;
2. Railroad work for railroad shops;
3. Clearing house for furloughed employees;
4. Flexible hour or mileage pay period;
5. Extra boards; and
6. Special conference between management and system representatives of unions when necessary to curtail expenses to an extent affecting employment.

Owing to obvious limitations of time and space it is not possible to elaborate these steps of a union-management employment stabilization program at great length. Just a few words of explanation however are desirable.

Systematic and scientific forecasting of revenues and the budgeting of expenses based thereon is clearly the very first essential of a sound stabilization program. Railroad work in railroad shops in preference to contracting out such work makes available a new source of work, especially if the facilities of the railroad permit of a certain amount of economical manufacturing, which can be done during times when these facilities are not so heavily taxed by routine maintenance work. Maintaining a clearing house and registry system of furloughed employees and making it necessary to ascertain whether or not a furloughed employee is available for transfer before a vacancy is filled anywhere on the system helps to save many an employee for the railroad. It also helps the furloughed employee. The flexible hour or mileage pay permits of adjustments in hours within reasonable and jointly-agreed-upon limits in order to tide over declines in income. The provision of extra boards at shop and roundhouse points makes available local standby forces from which to fill temporary vacancies due to absentees or emergency demands for a few additional men. Finally the practice of convening the general chairmen or system representatives of the employees affected when expense reductions are necessary, advising them of the prevailing crisis and its causes, will secure from them cooperation and advice as to how best to apply the various alternatives possible in order to effect the desired economies. Understanding the situation in advance through consultation with management regarding the best way to effect retrenchments enables the representatives of the employees to explain matters properly to the rank and file. The result is fewer misunderstandings and less dissatisfaction and, hence, better morale than when retrenchments are arbitrarily applied by management.

Suffice it to say under the heading of employment stabilization that union-management cooperation is indispensable to the solution of this problem. Not only is the detailed application of certain existing working rules involved in employment stabilization, but the active help of each and every employee is necessary in this process. For example, the cooperation of the employees is very helpful in enabling a railroad management to increase the work in its shop from manufacturing sources. The element of competition with outside concerns must be reckoned with. That progress in employment stabilization has already been achieved by the assistance of union-management cooperation is demonstrated by the fact that the annual wage income per shop employee on the Baltimore and Ohio for the year 1925 has been increased over fifty dollars. In some shops of the Canadian National this income has been increased 10 per cent or more during the last year.

Securing Traffic

The standard unions are in a unique position to help railroad managements in securing traffic. Their ability to be of service along this line results from the policy adopted by the regular labor movement actively to promote the sale and use of union made goods. To this end the American Federation of Labor has established the Union Label Trades Department whose purpose is to "promote a greater demand for products bearing the Union Label and of Labor performed by union workers; to investigate into, devise, recommend, and within the limits of its authority, carry into effect methods for the advertisement of Union Label products; . . ."

In addition to the traffic which comes to a railroad through the activities of the standard unions of its employees functioning through their various affiliations there is another share which comes through the activities of the local organization of its employees directly on the ground. For example, it has been demonstrated over and over again that many individual employees are frequently in a position not only to solicit passengers and freight traffic for their particular railroad, but because of special connection or influence, actually to direct such traffic to their railroad. Again their local unions, affiliated as they are with other local bodies of workers and other organizations, enjoy an influence in their respective communities and with the merchants of these communities which becomes an asset to the railroad in securing traffic.[4]

At all events, it has been shown over and over again on the Baltimore and Ohio and Canadian National Railways that the help of the employees and their unions to railroad management especially in highly competitive territory is a factor of considerable value when securing traffic. The business getting capacity of the hosts of railroad workers can be mobilized best through union-management cooperation. The joint cooperative conference provides an excellent opportunity to organize local campaigns for this purpose and the objects of the cooperative program provide the incentive and inspiration to carry on these campaigns.

But perhaps more important than either of the two factors just described for stimulating traffic flow to a railroad is the improved service which results from sound cooperation. This in the last analysis is the test of the railroad traveller and shipper. Is he treated courteously by the railroad's employees; do the trains run on time; are they handled smoothly and safely; are the meals in the dining car appetizing and tasty? When he ships freight, are his goods handled without damage and delay? A passenger or a shipper may, because of either or both of the factors previously indicated, prefer to use one railroad as compared with another and may therefore be inclined to give the railroad he otherwise prefers a trial. But he will not stick unless his predilection is backed up by satisfactory or improved service. It is just because union-management cooperation works to insure the greatest possible effort and interest in good service on the part of the employees that a patron once secured for a cooperative railroad will continue to use it.

How the good reputation of a railroad management in dealing and cooperating with its employees and their unions is likely to manifest itself in the traffic secured by the railroad as revealed by its gross revenues is shown by the following figures. The railroad in question is the Baltimore and Ohio whose gross operating revenue is compared with the gross operating revenue of all the other railroads in the Eastern District, within which most of the Baltimore and Ohio's traffic originates.

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[4] An example of the efforts of one local shop federation to stimulate the flow of traffic to their railroad is shown in the pictorial section following page 22.

	Eastern District		**Baltimore and Ohio**	
Year	Gross Income	Index	Gross Income	Index
1921	$2,297,968,028	100	$198,622,373	100
1922	2,357,028,846	103	200,843,170	101
1923	2,734,569,662	119	255,594,435	129
1924	2,485,085,501	108	224,318,795	113
1925	2,559,778,632	111	237,546,940	118

It will be noted that the Baltimore and Ohio's share of the traffic increases since 1922, the year of the big shopmen's strike, has consistently been greater than the increases enjoyed by its competitors. In 1923, for example, the increase over 1921 was 10 per cent greater, in 1924 it was 5 per cent greater despite certain adverse conditions affecting coal mining along the Baltimore and Ohio and in 1925, 7 per cent greater. Since 1923, the year union-management cooperation was first introduced, the Baltimore and Ohio has increased its gross earnings by $197 for every $100 increase of all the other railroads in its territory.

Financial Sharing of the Gains of Cooperation

One of the objectives of the union railroad worker when he supports the policy of cooperation is improvements in his yearly earnings. Steadier work the year round accomplishes this to a certain extent by enhancing his wage income. But this reward as a share of the gains of cooperation is frequently slow in coming. Furthermore, it is a bit difficult for the great mass of railroad workers to grasp its value as long as there are no furloughs in sight. Increasing wage income through stabilization of employment works therefore in a sort of negative way in satisfying workers with their part in the cooperative program. In the last analysis it is desirable to share the gains of cooperation in a positive way in the form of some increase in their wage income.

The best shape for the worker's share to take because of its simplicity and the ease with which it can be understood is an increase in the basic wage rate. By one process or another most wage earners and employers have come to regard the hourly rate as the most important element of the wage bargain. As long as this is true it suggests at least one excellent method whereby the railroad employee may be enabled to participate in the gains of cooperation.

But from the management's point of view the problem of sharing the gains of cooperation in this form is, unfortunately, not so simple. All of the usual complications of wage adjustments come into play, such as the rates of wages paid for similar work by other railroads and in other industries, the cost of living, the financial condition of the particular railroad in question, of the railway industry as a whole, and all industries in general as well as the state of the employment market. In the railroad industry the situation is still further complicated by public regulation of rates. The net result is that hardly any railroad management ever sees fit to step far out in front of all other managements in increasing wage rates.

It is because of these inhibitions that wage earners are so critical of the wage system. The factors ordinarily considered during wage negotiations all seem to combine to retard legitimate increases in real wages. It is only after almost heroic efforts on the part of wage workers that they are sometimes successful in making progress in their standard of living during times of rising prices. Paradoxical as it may seem, gains in real wages have usually been made during periods of declining prices and then by the hard expedient of resistance to wage reductions by the organized workers.

So is it apparent that the functioning of the wage system in industry, and especially in railroad service, could be greatly improved and made more attractive to the railway employee as well as railway management if the important facts of production were adequately taken into consideration. After all the chief source of higher wages in the long run is the increase in the surplus which is created by improved production methods, elimination of waste and similar devices. What labor must have if it is to realize its legitimate desire to improve its standard of living is a fair share of this increased surplus. Labor's interest and assistance along cooperative lines will not only be maintained but will also be greatly stimulated when it shares fairly in this surplus.

The first step therefore to enable railroad employees to share fairly in the gains of production is to recognize the productivity or increased output factor in wage negotiations. In other words, wages should in some measure be advanced from time to time as the overall output of the men per man hour or day increases. Consideration should also be given to improvements in quality of work done and materials saved. The item of *service,* in short, on the part of the men and their unions should be given decided weight in wage adjustment along with the other factors usually considered. At all events an agreement that the principle of productivity will hereafter play a proper part in wage negotiations will partially validate the incentive of sharing fairly the gains of cooperation.

On the Baltimore and Ohio Railroad this principle has been recognized and actually incorporated in the form of a preamble to the agreement between the railroad and the system federation of its shopmen. This preamble reads as follows:

> The welfare of the Baltimore and Ohio Railroad and its employees is dependent on the service which the railroad renders the public. Improvements in this service and economy in operating and maintenance expenses result chiefly from willing cooperation betwen the railroad management and the voluntary organizations of its employees. When the groups responsible for better service and greater efficiency share fairly in the benefits which follow their joint efforts, improvements in the conduct of the railroad are greatly encouraged. The parties to this agreement recognize the foregoing principles and agree to be governed by them in their relations.

But such an agreement as to principle is hardly sufficient in the long run to satisfy fully the fair sharing of the gains of cooperation. Much cannot be expected from it simply because of the complications precipitated by other railroads and industrial managements which prefer to take full advantage of the so-called "law of supply and demand" in dealing with the wage problem. Consequently it becomes necessary to make provision for a more direct financial reward to the employees. Such a reward would be based squarely on the gains which have resulted from cooperation as determined by some mutually acceptable method for measuring these gains. The reward would be distributed on a collective basis, every worker participating in proportion to the total time he has worked and his regular wage rate. It would be paid out at the end of each pay period so that the employee would clearly see the relation between his cooperative effort and the contents of his pay envelope. Furthermore, the capacity of the railroad to provide this financial reward would be safeguarded or stabilized by a reserve fund accumulated out of the gains of cooperation just the same as dividends and interest to the stock and bond holders are stabilized. This form of gain sharing would really be a dividend on cooperation.

A system of gain sharing which conforms in part to this principle is actually in vogue in the transportation service of the Southern Railroad. Because of the nature of this service and the way transportation accounts are and can be kept, it is a relatively easy matter to devise a simple and fairly accurate method for measuring the results of cooperation in this department. Unfortunately, the same yard stick is not feasible in the maintenance of equipment and maintenance of way departments.

To devise methods for measuring the gains of cooperation not only in the transportation but also in the maintenance and auxiliary departments of a railroad is perhaps the most important immediate problem before railroad managements and the unions where the cooperative program is in effect, or where its establishment is contemplated. Two special joint committees composed of representatives of management and the shopmen's unions are at work on two of these railroads in an endeavor to find a solution for this problem.

Conclusion

In concluding this exposition of union-management cooperation in the railroad industry, special attention is invited to the fact that such cooperation is not a plan although it has often been referred to as such. It is a development, a growth, a step forward in the relation between labor and management. Before this step can be taken certain basic conditions and attitudes must have been established. When they prevail it becomes possible not only to arouse the interest of both railroad labor and management in the primary purposes of the steam transportation industry—good, safe, efficient and economical railroad service—but also to put into practice far reaching reforms and method for bettering this service and increasing operating efficiency, improving the conditions of employment and raising the standard of living of the industry's employees, as well as stabilizing the legitimate return to which railroad investors are entitled. President Daniel Willard of the Baltimore and Ohio has expressed his conviction of this point in the following words:

> I believe that it has now been fully demonstrated that the cooperative plan which the Baltimore and Ohio Railroad has put into effect, in cooperation with its shop employees, and with the support of their respective unions, is no longer an experiment. It has more than justified itself from many different angles. It is now a part of the definitely adopted policy of the Baltimore and Ohio Company, and I have a feeling that we have not yet begun

to realize the potential possibilities of the plan. As time goes on and as we develop and cement still further the understanding and relationship which has already grown up between the management and the men, I feel certain that the friendly and sympathetic efforts of both parties will discover and suggest new methods and new practices that will not only make for economy, and thereby enable the railroad to pay good wages and at the same time maintain satisfactory working conditions, but will also contribute towards giving to the public lower rates for transportation service which they desire, but for which in my opinion they sometimes press with undue and unwise urgency.

Many additional illustrations both of a minor and a major nature might have been submitted to show how union-management cooperation is of far reaching aid in introducing, stimulating and perfecting many devices, systems and methods for increasing shop output, reducing delay, saving materials, training employees, selling service and improving morale. A description, for example, might have been presented of the rapid improvements made in reorganizing not only car but also locomotive repairs on the basis of the so-called "spot system." The decided progress effected in scheduling and routing heavy repair work through shops might also have been explained in detail. Actual examples of the thousands of new devices, jigs, fixtures, shop kinks and other improvements suggested and perfected by the men might have been cited and described, and progress in the measurement of production might have been outlined.[5]

On the Baltimore and Ohio alone, since the beginning of the cooperative movement in the spring of 1923, over 14,000 propositions of one kind or another have been handled by the representatives of the shopmen and the local plant managements at 2180 local union-management cooperative meetings held over the entire system. Of these 14,000 propositions, over 11,300, or more than 81 per cent were approved by these conferences and put into practice. Only 1208 or 8.5 per cent were dropped as not feasible, while 1436 are still under discussion or are being held in abeyance, pending the appropriation of funds necessary to carry them out. The propositions so disposed of are of all kinds, classes and descriptions in their bearing on shop and railroad performance, propositions which, in short, management usually tries to deal with single-handed when it does not enjoy the cooperation of the employees as mobilized through their unions.

The striking feature of union-management cooperation is not so much the particular nature of the improvements effected or system of production control, for example, conceived and introduced, nor is it even the large number of improvements, reforms, new devices, and suggestions advanced by either men or management for the purpose of more satisfactorily discharging the railroad's responsibility to the public, its employees and investors. The most important test of union-management cooperation is the enthusiasm and interest manifested by the entire railroad organization irrespective of employee or officer in the intensive improvement of the railroad's operating and service performance and the determination to effect such improvements.

Thus it does not matter if management primarily takes the initiative, prepares plans, and introduces improvements with the cooperation of the employees, or if the employees through their unions conceive, perfect and present plans for betterments in the industry. There is sufficient opportunity for both to work at the task. And, by this same token, whatever the gains which result from the introduction of improved methods, whether initiated by the employees or management, genuine cooperation demands that they be fairly shared by all parties at interest.

Union-management cooperation in the railroad industry may, therefore, in the last analysis, be defined as an enlargement of the responsibilities of railroad worker and officer in respect to one another, justified in each other's and the public's mind by the benefits each will enjoy from such whole-hearted organized cooperation.

Appendix

Typical Set of Minutes

Showing Types of Propositions Discussed at Local Bi-Weekly Union-Management Cooperative Meetings

On the next page is reprinted a typical set of minutes of a local joint cooperative conference in Moncton, N. B.

Special attention is invited to such items as 10-M-3, "Increased Consumption of Mill Type Lamps" and 11-M-4, "Men Tampering With Heating Coil Valves—." The comments under these items illustrate just how the machinery of the unions, such as lodge meetings and committeemen, is invoked when dealing with matters brought up by management.

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[5] Four such devices designed and built by workmen are shown in the pictorial section following page 22.

Canadian National Railways—Atlantic Region

Minutes of Co-operative Meeting Number 21

Moncton Locomotive Shops, November eleventh, 1925.
Time started, 2.30 p.m.
Time adjourned, 4.35 p.m.
Total time, 2 hours, 5 minutes.

Representing Management

J. Graham,	(Chairman)	Superintendent of Shops,
G. F. Knight,		Shop Practice Engineer,
P. G. Pearson,		Foreman, Erecting Shop,
Geo. Kennedy,		Foreman Machine Shop,
Fred Carroll,		Foreman, Blacksmith Shop,
N. Rae,		Foreman, Boiler Shop,
E. P. Gillespie,		Foreman, Electrical Dept.,
E. R. McPherson,		Local Storekeeper.

Representing Employees

John A. Godfrey,	(Chairman)	Machinist,
Vance Dalzell,		Machinist,
Bert Swetnam,		Electrician,
Charles Fox,		Blacksmith,
Thomas Gibson,		Boilermaker,
Samuel Cliff,		Tinsmith.

Discussion of Items Carried Over

3-E-49 Erection of Central Shop Performance Records.[1]
Suggestion adopted.

6-E-5 Additional Work for Moncton Shop.
In connection with the above item, Mr. Graham advised meeting that advice had been received from Chief of Motive Power to the effect that the System's requirements of coal picks would be taken care of at Moncton Shop. Foreman Carroll advised that dies had been completed for making side bearings for CNR and CGR.

7-E-9 Congestion of Copper Pipe Shop.
8-E-9 Performance of Mcavity Car Heater Valve.
9-E-8 Motor in File Room.
} Progress reported.

9-E-13 Table for Centre Distances in Main and Side-rods and Driving Box Flange Thickness.
Progress reported.

9-E-14 Fan in Blacksmith Shop Too Noisy.
Condition complained of has been eliminated.

9-E-15 Quality of Steel Used for Making Chisels.
9-E-19 Boiler Scaling Machine Too Noisy.
} Progress reported.

9-E-23 Scantiness of Metal in Brass Castings 4584-X, 3620-X and 3621-X, Big End Brasses in 6000 Class Locomotives.
Suggestion adopted.

9-M-25 Record of Castings Used in Locomotive Repairs.
Suggestion carried out.

10-E-2 Schedule for Routing Machinists' Apprentices Through Shop.
Progress reported.

10-M-3 Increased Consumption of Mill Type Lamps.
Due to the fact that the monthly consumption of this type of lamp is on the increase the Committee was asked to bring matter up in the different lodges and ask that as much care as possible be exercised in the handling of the lamps.

10-E-4 Respirators for Men Working With Potash.
Suggestion adopted.

New Items

11-E-1 Oil Furnace in Frog Shop in Need of Attention.
It was stated that this furnace emits considerable smoke when in operation. Referred to Messrs. Carroll, Godfrey, and Knight to investigate and report at next meeting.

11-E-2 Condition of Emery Wheels in Machine Shop.
It was stated that some of these wheels are getting in bad condition and it was suggested that this question be gone into and something done to ensure these emery wheels being in proper condition for use when required. Referred to Messrs. Knight, Godfrey and Kennedy to investigate. Also suggested that foreman make a careful check of the whole situation during the next two weeks.

11-E-3 Hoisting Facilities in Frog Shop.
In connection with this matter it was stated that the present method of blocking up boilers, work equipment machines, etc., is cumbersome and costly, and the work would be greatly facilitated by the installation of proper hoisting facilities. Mr. Graham stated that Engineering Department would not permit the installation of roof cranes, but matter will be further considered to see if anything can be done to improve situation.

11-M-4 Men Tampering with Heating Coil Valves, Boiler Shop Toilet.
It was stated that some of the men are opening the bye-pass valves, allowing the steam to flow through. Cooperation of all concerned asked for in discontinuing this practice. Matter to be taken up in different lodges.

Deferred Items

3-E-31 Bench for Man on Pump Repair Work.
Deferred for present, account expense involved.

4-E-1 Change in Location of Melting Furnace in Moulding Shop.
Deferred for present, account expense involved.

6-E-11 Installation of Steam Lines in Erecting Shop Pits.
Deferred for further consideration.

Statistical Summary of Items handled by Co-operative Committee.

November:	Brought up	4	To date: Brought up	266
	Adopted	4	Adopted	247
	Dropped	0	Dropped	16
	Pending	3	Pending	3

J. Graham, For Management,
John A. Godfrey, For Employees,
Frank H. Gillespie, Secretary.

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[1] 3-E-49 signifies that this item came up in March, the third month, that union representatives introduced the proposition and that it was the forty-ninth proposition brought up that month. Similarly 9-M-25 is an item brought up in September, by a management representative, the twenty-fifth item considered in that month.

II. Labor's Appraisal of Principles, Methods and Results

By **BERT M. JEWELL**
President, Railway Employees Department, A. F. of L.

UNION-MANAGEMENT cooperation in the American railway industry has not been an overnight growth. It has been in the process of development for many years. In fact, it may be said that union-management cooperation started when unionism first arose in the railway industry and insisted upon recognition. This occurred as long ago as 1854 on the Baltimore and Ohio Railroad, a significant historical fact when considered in the light of the policy of union-management cooperation, inaugurated on this same railroad in the year 1923, almost three quarters of a century later. In 1863 a few years after this first attempt to organize railroad labor, the Brotherhood of the Footboard was founded. The following year it reorganized and became the present Brotherhood of Locomotive Engineers. It should be exceedingly interesting this evening, in the light of our consideration of cooperation, to note for a moment the original purpose of this pioneer American railroad labor union as expressed in the preamble of its constitution:

> The interest of the employer and the employee being coordinate, the aim of the organization will be the cooperation and cultivation of amicable relations with the employer and to submit questions of differences to arbitration when an agreement cannot otherwise be reached and to guarantee the fulfillment of every contract made in the name and by the use of every power vested in it . . . . .
>
> The purpose of this organization shall be to combine the interest of locomotive engineers; elevate their social, moral and intellectual standing; to guard their financial interests and promote their general welfare.

In the face of the many years which have elapsed since the founding of the first real independent American railroad labor union, organized around the ideals of harmony, cooperation and betterment—years which have witnessed many bitter clashes between railroad worker and manager—it seems to me especially significant that we should be gathered here tonight to consider in a dignified, detached and scientific atmosphere, the first organized steps in the actual realization of these ideals.

Permit me to tell you further that in my humble estimation our meeting tonight is still more auspicious, coming as it does on the eve of the consummation of a new era in the relationship of employee and managements in the railroad industry. The new era I have reference to is resulting from the agreement between the railroad unions and railroad executives on the matter of a proper railroad labor policy as established by the law of the land. The fact that our unions and the executives of our railroads have found it possible to agree upon such a policy, to draft a law expressing that policy and to present it to Congress for enactment, is a splendid testimonial to the constructive spirit motivating both union men and managements of our great American railroad industry. I am firmly convinced that with the passage of the Railway Labor Act now before Congress the foundation will be laid for the most far-reaching development yet achieved in any industry through genuine cooperation between employees and managements. Before giving labor's appraisal of the principles, methods and results of union-management cooperation in the railway industry, I am going to review briefly the steps in the development of labor's systematic cooperation with railroad management for improved service and efficient operation. I also want to emphasize at the very outset that organized railroad labor is genuinely and deeply concerned about the efficient and economical operation of our railroads, as well as their ability to render the best possible service to the public.

Above all else does organized railroad labor, especially the groups I have the honor to represent, feel that its interests are best safeguarded and furthered by truly efficient and capable railroad management. For bitter experience has taught us only too often that the employees are always called upon first to submit to privations when management falls down on the job, and it is they who suffer most severely. The interest of organized railroad labor in good efficient management is profound and inescapable.

I should like to make another observation. Organized labor regards railroad management as a trustee. By the very nature of its position and function it should and must so conduct the affairs of our railroads that the three parties concerned with their success, namely the public, labor and investor, will share and share fairly and alike in the receipts of improved railroad service and economy, as meted out to them in the respective coins of their realms. If our railroads in the future are to operate successfully, enjoy public confidence and secure the hearty cooperation of their employees, then railroad management must not discriminate in favor of any group at the expense of the others. A grave responsibility is imposed upon railroad management when it comes to the realization of this ideal. I sincerely believe, however, that we can do much through cooperation to achieve it.

Union-management cooperation as a definite development in the railroad industry really dates back to the days of the United States Railroad Administration. During this period the standard railroad labor unions were universally recognized as the exclusive agencies of the employees in their relations with the Federal Railroad Administration. Their officers represented the employees on the joint boards of adjustment and wages and working conditions set up to handle railroad labor questions. These and related developments really laid the foundation for union-management cooperation during federal control. A proposal was actually made to the then Director General, Walker D. Hines, by practically all of the recognized unions, suggesting that cooperative arrangements be entered into between the standard unions and the managements of the railroads. The object of the proposed cooperative program was improved public service for mutual benefit. Joint local, system and national committees were to be organized to further the program. You may be interested in hearing that our friend and fellow-speaker of the evening, Mr. Beyer, played a prominent part as engineer in the formulation of the first railroad union cooperative program.

The Railroad Administration, especially the Director General, looked with favor upon the suggestions of the standard unions, and considered plans to carry them out. In fact, steps were actually inaugurated in this general direction, but unfortunately, by the time it seemed practicable to proceed intensively, the larger problem of returning the railroads to private control or continuing them under federal control crowded such developments as union-management cooperation out of the field. It was not practicable during this period of controversy to do anything constructive along the lines proposed by organized railroad labor.

From the time of the return of the railroads to private control until the termination of the shopmen's strike of 1922 were trying days for both railroad management and railroad labor. Adjustments in railroad operating costs became necessary. Controversies developed which threatened, in the minds of labor, not only to lower its living standards, but also to destroy the very organizations which railroad labor had slowly and painfully built to safeguard the legitimate rewards to which it considered itself entitled from the industry. Throughout this controversy, railroad labor harbored the conviction that if only the emphasis in railroad management could be shifted from fighting the unions and cutting wages to the elimination of waste, the correction of managerial inadequacies, and the improvement of efficiency and service, there would be no necessity for devitalizing the unions of the employees, contracting out work and reducing wages. This was the burden of much of labor's argument before the Railroad Labor Board and, in justification of its contentions, it mastered a great deal of evidence to prove that there was considerable opportunity to effect far-reaching economies in railroad operations and maintenance.

Forced into the position of "His Majesty's Opposition," organized railroad labor did not even during these unhappy days lose sight of its basic interest in efficient railroad management. But all it could do was to suggest, criticize, protest, object and resist. How much more satisfactory it would have been had the difficulties of those days been met jointly in the spirit of genuine union-management cooperation.

Despite the gravity and extent of the misunderstanding which grew up between railroad labor and management after the war, I want to remind you that the shopmen, in addition to pointing to opportunities for reducing railroad expenses other than reducing wages or arbitrarily modifying rules, plead for constructive cooperation before the United States Railroad Labor Board. Railroad managements were approached long before the shopmen's strike with the offer to cooperate, and publicly, even during the strike, this offer of the standard shopmen's unions was reiterated.

It was not, however, until the spring of 1922 that a railroad executive was found who sufficiently un-

By Way of Illustration

THE pages which follow illustrate certain features of union-management cooperation.

1. Cooperative Committees

Figure 1 shows the union-management cooperative committee in session at the Moncton Locomotive Shops, Canadian National Railways, Moncton, N. B. A typical set of minutes from a meeting of this committee is reprinted on page 20.

2. Interest in Shop Safety

Interest in shop safety is stimulated through union-management cooperation. Figure 2 shows management and union representatives at the Riverside (Baltimore) Engine Terminal, Baltimore and Ohio Railroad.

3. Devices Suggested and Perfected by the Men

Figures 3 to 6 show devices designed by shopmen working under union-management cooperation. Suggestions which lead to improvements of this kind are stimulated in great numbers by the cooperative relationship.

Figure 3. Hollow Tap for Staybolt Sleeves and Wrench for Flush Caps

The hollow tap is for tapping threads of sleeves of flexible crown bolts without removing the bolt. When a sleeve requires rethreading on account of being stripped when removing cap it is not now necessary to remove the bolt and sleeve, as this tap fits down over the bolt and taps the threads with the sleeve still intact. This saves about twenty minutes per bolt, which is a large item besides saving the bolt. The wrench is for removing flat caps in place of gouging. It is rigged with an air motor which jars the cap loose while the wrench is being turned with a lever, creating considerable saving in caps as well as time in removing them. Both these were designed and made by Boilermaker Francis Carbine, who is shown in the photo.

Figure 4. Ratchet and Holder for Filling Grease Cups

With this device it is possible to fill four grease cups with one filling of the holder which does away filling by grease cup caps. It is now possible to fill four grease cups in approximately the same time that was required to fill one the old way. This device was designed and made by Machinist Robert M. Englebach, who is shown using it.

Figure 5. Expander for Reclaiming Metallic Piston and Valve Packing

This device consists of a holder and a taper round wedge which is inserted in the center of the packing when placed in the holder and when forced down brings the packing back to its original shape. This has saved the company large sums of money by reclaiming all kinds of metallic packing. It was designed and built by Machinist John T. Burns, who is shown in the photo.

Figure 6. Mandrel for Holding Valve Bodies in Lathe

This mandrel is used for holding piston valve bodies in a lathe to face off both ends with one setting, doing away with reclamping to face plate to turn off opposite end, thereby saving about one-half hour per body. It was designed and made by Machinist Louis E. Witt, who is shown using it.

4. Stimulating Traffic

Figure 7 shows an example of the efforts of the shop craft unions to stimulate traffic flow to their railroad. In this case the Chilicothe (Ohio) local shop federation of the Baltimore and Ohio Railroad took over a page of the local paper and induced local merchants to subscribe to a section thereof, thus indicating that they ship over the B. & O. and so are worthy of the patronage of the shopmen. Many other examples could be cited to show the genuine interest of union shopmen in securing business for their road.

FIGURE 1

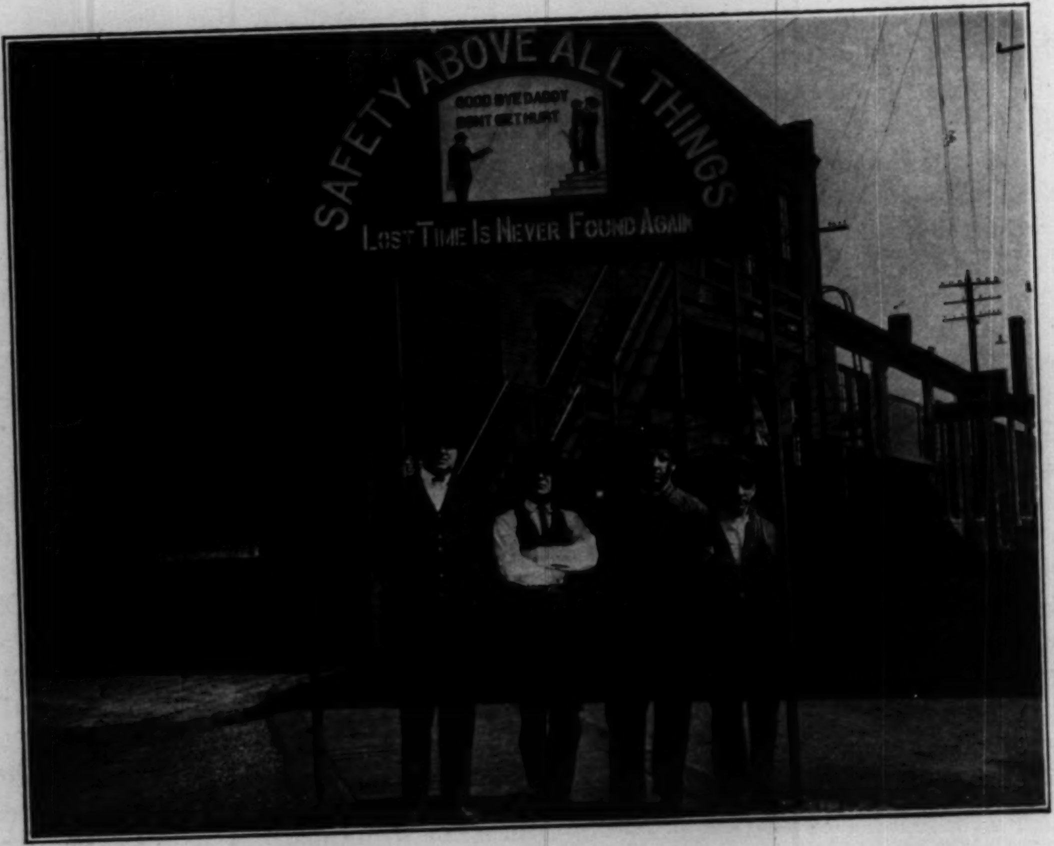


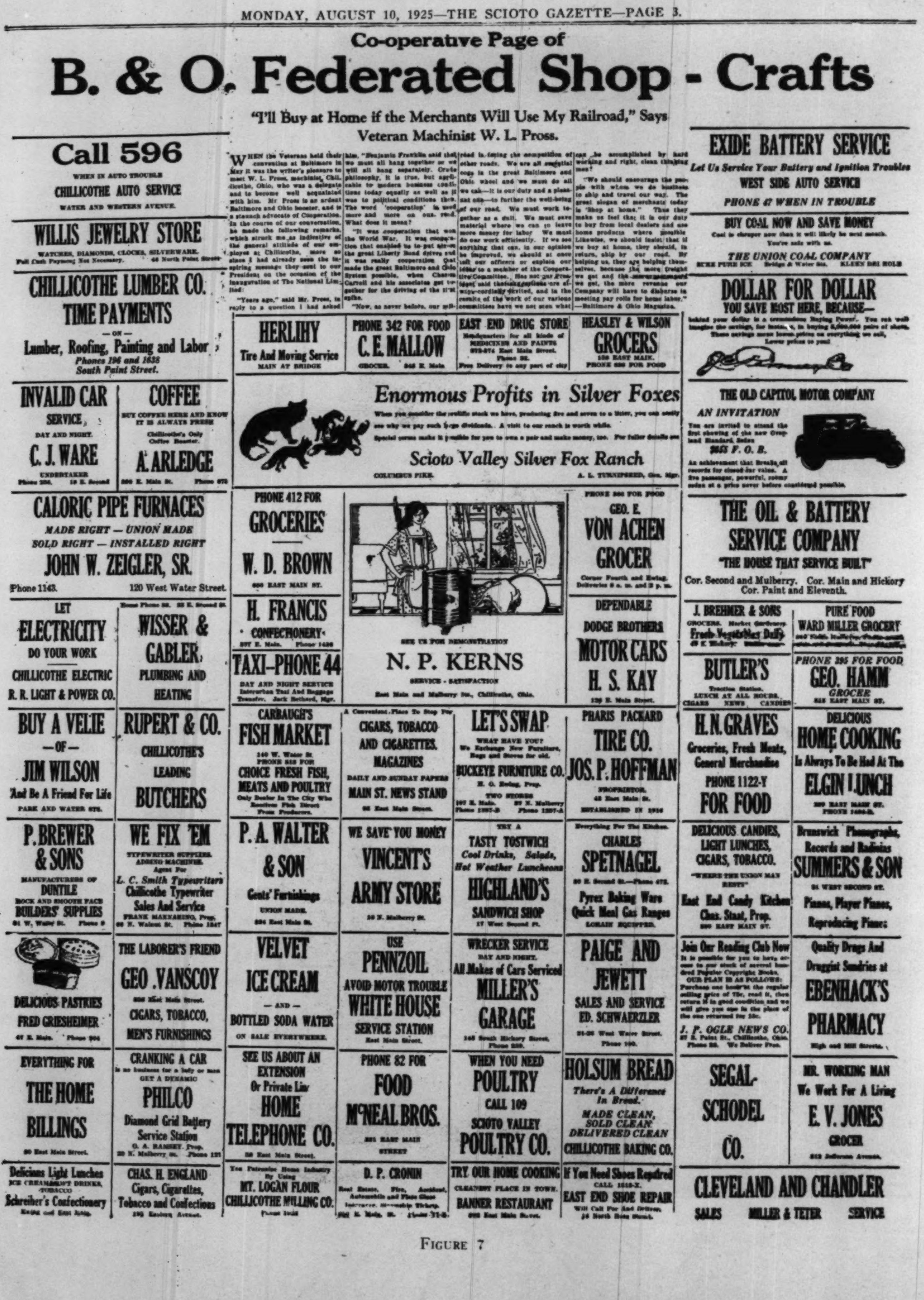
FIGURE 2

Figure 3

Figure 4

Figure 5

Figure 6



MONDAY, AUGUST 10, 1925—THE SCIOTO GAZETTE—PAGE 3.

Co-operative Page of

B. & O. Federated Shop - Crafts

"I'll Buy at Home if the Merchants Will Use My Railroad," Says Veteran Machinist W. L. Pross.

WHEN the Veterans held their convention at Baltimore in May it was the writer's pleasure to meet W. L. Pross, machinist, Chillicothe, Ohio, who was a delegate and to become well acquainted with him. Mr Pross is an ardent Baltimore and Ohio booster, and is a staunch advocate of Cooperation. In the course of our conversation, he made the following remarks, which struck me as indicative of the general attitude of our employes at Chillicothe, more so since I had already seen the inspiring message they sent to our President on the occasion of the inauguration of The National Limited:

"Years ago," said Mr. Pross, in reply to a question I had asked him, "Benjamin Franklin said that we must all hang together or we will all hang separately. Crude philosophy, it is true, but applicable to modern business conditions today equally as well as it was to political conditions then. The word 'cooperation' is used more and more on our road. What does it mean?

"It was cooperation that won the World War. It was cooperation that enabled us to put across the great Liberty Bond drives and it was really cooperation that made the great Baltimore and Ohio System possible, when Charles Carroll and his associates got together for the driving of the first spike.

"Now, as never before, our railroad is facing the competition of other roads. We are all essential cogs in the great Baltimore and Ohio wheel and we must do all we can—it is our duty and a pleasant one—to further the well-being of our road. We must work together as a unit. We must save material where we can to leave more money for labor. We must do our work efficiently. If we see anything that can, in our opinion be improved, we should at once tell our officers or explain our ideas to a member of the Cooperative Committee. Has not our President said that suggestions are always cordially invited, and in the results of the work of our various committees have we not seen what can be accomplished by hard working and right, clean thinking men?

"We should encourage the people with whom we do business to ship and travel our way. The great slogan of merchants today is 'Shop at home.' Thus they make us feel that it is our duty to buy from local dealers and use home products where possible. Likewise, we should insist that if we buy at home, they should, in return, ship by our road. By helping us, they are helping themselves, because the more freight we get and the more passengers we get, the more revenue our Company will have to disburse in meeting pay rolls for home labor."
—Baltimore & Ohio Magazine.

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FIGURE 7

derstood the trend of the times and saw the significance of labor's proposition to cooperate. This executive was President Willard of the Baltimore and Ohio Railroad. He agreed with President Johnston of the International Association of Machinists and Mr. Beyer that the consummation of an understanding along cooperative lines between management and the standard shopcraft unions of the Baltimore and Ohio was a feasible matter and deserved a careful trial.

The shopmen's strike of 1922 intervened to prevent any attempt to inaugurate an experiment in cooperation on the Baltimore and Ohio at the time is was originally proposed. As soon, however, as the strike was settled, steps were taken to give union-management cooperation a trial. Glenwood shops, a large modern locomotive and car repair plant, located in Pittsburgh, was selected in which to develop this technique of cooperation. Start was made in January, 1923, after the men locally in mass meeting had signified their willingness to assist wholeheartedly in the proposed demonstration. Step by step for approximately a year the details of organization for union-management cooperation were worked out under the general direction of our friend here, Mr. Beyer, who was retained by us to work with management for this purpose. So successful was this original experiment at Glenwood that an agreement was subsequently entered into between the shopmen's unions and the managements extending the cooperative program to all the shops of the Baltimore and Ohio.

However, before the Glenwood experiment had gone very far, our distinguished guest of the evening, Sir Henry Thornton, President of the great Canadian National Railway System, had learned of the organized shopmen's interest and activities along cooperative lines. Suffice it to say that through his quickness to appreciate the far-reaching possibilities of union-management cooperation, joint steps were agreed upon to introduce cooperation on the Canadian National also. The developments on the Baltimore and Ohio, and the Canadian National have gone forward almost hand in hand. Since the introduction of cooperation on these two railroads, the same policy has been adopted by the organized shopmen and managements of the Chesapeake and Ohio, and the Chicago and Northwestern Railway systems.

I tarry a moment at this time, Mr. Chairman, to pay my personal respects to both Daniel Willard and Sir Henry Thornton, for the courage and wisdom they displayed when they accepted so wholeheartedly organized railroad shop labor's offer of cooperation. Speaking for my brothers in the roundhouse, on the up track and in the back shop, I can say, and truthfully, that we are glad of the opportunity to cooperate with President Willard and Sir Henry Thornton and their managements for improved public railway service. Our desire and determination, as well as actual ability to cooperate, are the reflex of the general labor policy observed by these managements. In fact, as Mr. Beyer has pointed out this evening, intensive cooperation is the normal result of these policies. All of which, as I see it, testifies to the far-seeing industrial statesmanship of such railroad executives as Sir Henry Thornton and Daniel Willard.

Among the best evidence I can submit of labor's attitude towards union-management cooperation is the phenomenal growth of the movement among the organized workers, especially those of the railroad industry, since the first demonstration of its possibilities at Glenwood barely three years ago. The experiment actually began with 300 men in the plant, whose number was gradually increased to 1,000. I believe I am safe in saying that 250,000 union shopmen in the United States and Canada have officially gone on record through action of their respective conventions endorsing and supporting union-management cooperation. Of this number, approximately 50,000 are actually working under the cooperative policy today, with the prospect of others joining them in the not very distant future.

Another bit of evidence revealing labor's estimate of the desirability of cooperation in industry was presented by President Green of the American Federation of Labor before the joint annual meeting of the Taylor Society and the Management Division of the American Society of Mechanical Engineers last December. President Green said:

> Management holds a most strategic position. Its activities and its policies touch the very life, well-being and happiness of the workers. Chief among the ideals of labor is the development of cordial relations between the workers and management. The workers believe that through understanding and cooperation the best interests of all those associated with industry can be served.
>
> It is the hope and desire of labor that management will respond to this lofty sentiment so that in the consideration of policies management may seek to understand not what

> it might compel the workers to do but instead what the workers may be able and competent and willing to do.
>
> Through such understanding all the associated productive powers of industry can be mobilized into an economic, sustained, impelling force through which economy in production may be completely accomplished. Through the development of a cooperative spirit and the establishment and maintenance of a frank relationship the rewards of the efforts of all those associated with industry can be equitably distributed.

Most of you have learned briefly through newspaper reports last October of the official attitude of the American Federation of Labor on the matter of union-management cooperation. The annual convention of the Federation is the most authoritative gathering of representatives of labor in America. Its declaration of attitude and policy are very significant and show perhaps better than any other indication, how the bona fide American labor movement is thinking. The Executive Council of the Federation in its report to the convention described union-management cooperation and then recommended to the convention that:

> This whole movement be given most serious study and consideration. A number of management experts have recognized that the trade union is essential to the most scientific organization of industry and have contributed to information on this point, as well as promoted discussion and understanding within their profession. Many of these experts are man and women imbued with a desire to render public service in addition to contributing to the development of industry and their profession.

The Council then further recommended that

> . . . . the Federation keep in touch with such engineers and industrial experts as may be helpful in developing the information and the procedure necessary to union-management cooperation so that there may be reciprocal benefit through exchange of views and information.

Subsequently the entire Convention of the Federation unanimously approved the Council's report and recommendations on union-management cooperation as well, it should be noted, as labor's cooperation with the engineers and technical experts "in order that the experience of management cooperation with trade unions may be put at the service of all concerned with productional problems."

The evidence I have so far submitted to show labor's estimation of cooperation has been chiefly from official labor sources. It should be interesting therefore to learn what the man on the job thinks about it. Three questions to elicit his thought were propounded to a representative gathering of shopmen of the Baltimore and Ohio Railroad after the program had been in effect a year and a half. Here are the questions and the answers:

1. *Has the installation of the cooperative program restricted union activity?* The answer was "*No.*" The delegates said the shop committees were functioning as before, but with increased success for the workers and consequent improvement in the relationship between management and men.

2. *Under the new program are you compelled to work harder—are you more tired when the day's work is done?* The answer was another positive "*No,*" with the explanation that as a result of the installation of tools for all hands it is less difficult now to get the work out on time. Many hurried trips in search of tools are avoided, worry is lessened, and the workers go home feeling better than they formerly did.

3. *How does the amount of time you are now working compare with the amount you worked at similar business periods in former years?* The answer was that work has been more steady for a greater number of men since the new program has prevailed than at any similar period in former years.

These answer, according to the person who asked the questions were alike in substance from all points where the cooperative program had been adopted and came from old reliable union railroad workers.

Another aspect of the value attached to cooperation by organized railroad employees is their appreciation of the remarkable decline in the grievances which tend to arise from day to day. I believe I am safe in my judgment when I state that minor grievance cases on the Baltimore and Ohio and the Canadian National have been more than cut in two, and as for appeal cases—those which are not settled locally on the ground where they originate—these have been reduced by approximately 75 per cent. A bit of reflection will quickly reveal why this is a natural result of cooperation. Under cooperation at local points where the foreman and management come in daily actual and direct contact with the men on the job, the emphasis is on getting along with one another and attending to the business of the plant, not on quarreling, faultfinding and pin-pricking. The local union shop-committeeman no longer enjoys the unenviable distinction of being the men's "griever." His status is greatly improved and dignified. He has an important function to discharge as contact man between the employees he represents and the management. He and his union really are now a necessary and constructive part of the plant's complicated administrative machinery. And the local representatives of the management, with genuine cooperation as one of the major tests of local administrative success, become much more reasonable, tolerant and tactful in their dealing with the employees and their representatives. Narrow attitudes and technical interpretations of the working rules give way to human attitudes and just interpretations. The inevitable consequence is a great reduction in the causes making for grievances and petty dissatisfactions. So the men are happier at their daily tasks.

The thousands and thousands of practical propositions brought forth by the employees in the course of the year, referred to by Mr. Beyer in the closing words of his remarks this evening, are to me as significant a demonstration as any, showing how the average shopworker feels about union-management. If the program did not appeal to them, if they felt they were getting nowhere with it, it is a certainty that men would not continue to carry grist to its mills.

In final appraisal of labor's attitude, let me tell you what we are doing more adequately to discharge our responsibilities as organized shopmen working under the cooperative program. In explanation of this final appraisal I want to say this: the assumption of greater responsibility for the welfare of railroading, as I see it, implies more than simply a pious desire for cooperation. It has been shown here this evening how our organizations, by virtue of their structure and background, can lend themselves best for employee cooperation with management. The big problem before us and management is to adapt our organizations to this new function in industry and to enable management, especially officers in more immediate charge of men, to see how our unions can be helpful in the tasks of every day plant operations. Because we are so in earnest about our part in the cooperative program, we have concluded that it is essential for us to put at the disposal of these railroad managements and system federations of shopmen who jointly agree to cooperate systematically with one another, the services of a man who is, we believe, well qualified because of his experience as a mechanic, his training as an engineer, his knowledge of railroad management and appreciation of its problems, and particularly because of his understanding of the labor movement and appreciation of the human problems of industry. We have, as I already have indicated, retained our fellow speaker of the evening, Mr. Beyer, for this purpose. In short, we are sincere and determined to do whatever we possibly can to give effect to our conception of union-management cooperation.

Another undertaking of the federated shopmen's unions better to qualify their membership for union-management cooperation lies in the field of workers' education. Together with Brookwood, a resident labor school located at Katonah, N. Y., a summer school course has been organized for training especially shop committeemen, system representatives and union officers in the civics, history and economics of the railroad industry. Based on this fundamental knowledge, the courses then lead up to a proper understanding of organized labor's constructive function in the railway industry, the responsibilities and place of management, the technique of cooperation and the nature of many of the problems which confront the industry and its workers. Furthermore, in cooperation with the Workers' Education Bureau of America, we are preparing a series of text books on the railroad industry covering it from every angle, to be used by classes or organized workers. One of these texts will be on cooperative railroading. The fact that workers' education, especially the kind which interprets his industry to the worker, is spreading so rapidly, is another indication of the new concept which is developing among the workers in respect to their collective part in industry.

And now just a few words in conclusion. The development of cooperation between our railroad labor unions and management is not a simple task. The whole idea of cooperation calls for a new attitude of mind on the part of both the men and the managements. Long established attitudes of the old kind are not easily eradicated. Apathy, prejudice and doubt, retard progress. And where these are overcome, impatience is likely to step in and undo what little has already been accomplished.

Union-management cooperation is not a panacea for all our labor ills. It is only a simple step forward. We will experience set-backs and disappointments. We expect them. Impatience with results, skepticism and fear will be long in eradication. Ten years, nay twenty years, will be a short time in which to create a sounder, healthier and lasting attitude on the part of management towards our legitimate unions and of our unions towards management. I firmly believe that the crossroads have been reached and passed so that we may now count with confidence on a progressive improvement in the constructive relationship between railroad workers and managers. Speaking for the federated shopmen of our American railroads, I assure you we are determined to carry on. We stand ready and willing to cooperate with railroad managements at all times along sound lines.

III. Management's Appraisal of Principles, Methods and Results

By SIR HENRY WORTH THORNTON, K. B. E.
Chairman of the Board of Directors and President
Canadian National Railways.

THOUGH your Chairman in the very kind way in which he has introduced me has considerably overpainted the picture, he has neglected to tell you that industrially speaking I have been leading a double existence, for while I have been parading myself to some extent as a railway president, as a matter of fact I am also a trade unionist, and I happen to be an honorary member of the National Union of Railway Men in England. This distinction, which I can assure you I shall always treasure, has not, however, relieved me of the responsibility of working more than eight hours a day.

Before proceeding to discuss management's appraisal of union management cooperation in the railway industry, it may be illuminating to examine somewhat the history of relations between employer and employee and the procession of events which have brought us to the relative positions which one bears to the other.

Prior to the latter half of the eighteenth century industry, or manufacturing as it may perhaps more properly be called, rested in the hands of the master craftsmen and the trade guilds which they formed for the protection and advancement of their particular occupation or art. The master craftsman's plant was comparatively small and simple. Usually his shop was directly connected with his home, and for his assistance he employed a varying number of apprentices depending upon his importance. These apprentices were carefully trained by the master craftsman, and the atmosphere of the establishment was in many respects of a paternalistic nature.

The shops of the master craftsmen might be found almost anywhere; while their location was influenced to some extent by the presence of raw materials, facility of transport, a ready supply of labor, and other things, they were often scattered more or less throughout the countryside; that is to say, there were no large concentrations of industry in manufacturing centres commensurate with what we find today. Under these conditions there was but little, if any, of what are today called labor disputes, and serious collisions between the employer and the employee were relatively unknown. Manufacturing proceeded in quite a comfortable fashion and there were no nation-wide discordant notes.

However, with the appearance of the mechanical inventions which resulted in increased output and a lower unit cost, together with the employment of steam and, subsequently, electricity, a relatively cheap and highly effective form of energy was created which enormously expanded the industrial horizon and opened vast and attractive vistas to the master craftsman or, as he may now more properly be termed, the employer of labor. These various mechanical devices to which I have just alluded, together with the employment of new forms of energy for their operation, involved very large expenditures. And here is the first introduction of capital as we understand it today. All this necessitated also the employment of many hands for the operation of these machines, and the shop home of the manufacturer became what is known as the "factory". Not many, if any, single individuals possessed sufficient funds to establish a factory unaided, and so we find associations of those possessing wealth, each member contributing according to his ability to the establishment of the factory. Hence companies appeared, the contribution of each individual being represented by certain shares which he held in the establishment.

Factories of such magnitude employing a considerable number of men necessarily were driven to locations where a ready labor market existed and hands could be found. Facility of transport and an easy supply of raw materials became much greater factors in the proposition. And so we find factories locating in large towns and cities, with the resultant concentration of industry in larger centres of population and an inevitable movement from the countryside to the cities. In short, the somewhat scattered locations of the master craftsman disappeared and with them the master craftsman, his apprentices, and the paternalistic atmosphere which surrounded his establishment. Here was devoloped immediately an employing class on the one hand and a working class on the other. The employing class, being represented by a "company" of which it is sometimes said, "There was no body to kick nor soul to damn," forthwith, and somewhat naturally, pursued that policy in its relation to its employees which would produce the largest financial result. It may be said that the employing or capitalistic class really formed the first "union" whose chief and only objective was to serve the rather selfish interests of the company. Such a condition could result only in oppression, especially as in those days civilization had not advanced as far in the direction of welfare of the masses as is the case today, and men's minds were not psychologically prepared for such things as the subject of our discussion this evening.

This progress of events, I think, fairly accurately describes what happened in England which must be taken as the source and home of industrial enterprise, for at that period England fairly led the way in manufacturing. To a measurable degree the evolution I have described pretty faithfully represents what occurred everywhere throughout the world where manufacturing existed as such.

As the burden rested more and more heavily on the working masses and injustice and oppression became the rule rather than the exception, the inevitable result occurred. The employee, for his own protection, was forced to form associations which we know today as "trade unions," and the pendulum began to swing the other way. At once an unfortunate conflict developed between the employing class and the workers, the one trying to right its wrongs and the other strenuously resisting what it regarded as an invasion of its rights. As was natural when such conflicts occurred for such reasons, neither side got the right perspective and both overlooked their mutual dependence. History of capital and labor abounds with wasteful and deplorable contests. It has been said of war that it is the only game in which both sides lose. The same comment may be made with respect to industrial warfare, for while one of the sides may have won the immediate combat, scars were left which, festering, disturbed the good relationship between employer and employee.

Briefly this represents the evolution and history of the struggle between capital and labor.

The capitalistic system succeeded the antiquated feudal system and, as is the case in the introduction of all social systems, developed in its initial stages serious difficulties and problems. Like every system of so great a magnitude and world wide influence, it had to reduce itself to a rational bearing, and that is what is happening today in the relations between the employer and the employee.

Happily the time has arrived when the employer is prepared to recognize that unions and associations for the protection of the employee exist and cannot be eliminated, and that collective bargaining is just as essential for the welfare of the employee as associations of capital are necessary and useful to the investor; consequently the problem which today confronts us is how can these two essential factors of production be brought to assist one another for their mutual welfare, and, of this, union-management cooperation in the railway industry, is an expression.

The worker, no less than the capitalist, is an investor. The latter invests his money and the former invests his only resource,—his labor. The capitalist endeavors to make investments which are safe and permanent. The same motive actuates the worker; his chief desire is to secure employment which is continuous and which will bring to him a sufficient reward to enable him to live in comfort and decency and to educate his children as self-respecting members of society. In this laudable ambition he wins the good wishes of all, and this seems to be the common ground upon which labor and capital can meet.

The world as a whole produces enough to ensure every individual against hunger, want, and misery. In a word, the world produces enough to ensure every individual a decent and comfortable living. Unfortunately, our scheme of distribution does not fully accomplish this, and, perhaps through no fault of any particular class, there are grave inequalities which demand earnest thought and attention if civilization is to progress. It is along these lines that economics is making its greatest strides. Most of the difficulties which are experienced, arise from either nations or individuals reaching for more than that to which they are justly entitled. Civilization has not thus far solved the problem of wealth distribution any more than it has solved the problem of government, for, with respect to the latter, the pendulum has swung all the way from the oppressions of autocracies to the stupidities and inefficiencies of democracies, and we have not yet hit upon that form of government which will preserve freedom to the masses under a popular form of government and likewise create efficiency and honesty in the administration of public affairs. Some day we shall perhaps get it, but there remains much educational and evolutionary work to be accomplished. The same is true of our scheme of distribution. The present social system replaced worn out feudalism. No doubt the day will come when some other scheme will be substituted for the system which exists today and which involves serious injustices and inequalities. Revolutions, such as those which occurred in the closing years of the eighteenth century in France, and lately have taken place in Russia, are social explosions; and when an explosion takes place, more damage occurs in the rectification of affairs than is necessary, with the result that a good deal of useless harm is caused.

Social and economic pressure continues until it reaches the explosive point, and at this stage the masses revolt, with serious consequences ensuing. The burden which rests upon right-minded and far-seeing individuals is to bring about improvements in the social system which are evolutions as distinguished from revolutions. There is no material psychological difference between the ruthless capitalist and the Bolshevist. It is only the accident of birth which makes him either one or the other. It rests with the middle and sane third of society to keep the economic ship on an even keel. Unfortunately this sane middle third is often inactive and generally inarticulate. This is also the class which usually suffers the most from revolutionary explosions.

Let me say at once that I believe the great bulk of our working classes are reasonable and only seek those things to which they are justly entitled. My personal experience may have been unusual, but I can say frankly on this occasion as I have said before that, in all of my dealings with working people and trade union leaders, I have never found the first to be deaf to reasonable argument and fair treatment, and I have never had one of the latter let me down or pursue a treacherous or dishonest course. I think we must accept as axiomatic the statement that the great majority of workers are fair and reasonable. If this is not the case, then we may as well put up our shutters and retire from the field with the knowledge that further advancement is impossible.

The capitalist owes certain obligations to labor, which have been set forth in previous addresses this evening with singular force and lucidity. On the other hand, equally so do the labor masses owe a similar obligation to the employer. Labor unions are here, and they are here to stay. There is no way in which they can be eliminated. From the point of view of the worker, capital is equally entrenched and likewise is here to stay, and since, under the conditions which are likely to obtain for a long period of years, neither one can get rid of the other, is it not reasonable to recognize the fact that we are confronted by a condition and not a theory, and work for the mutual welfare of both?

The haunting fear of every laboring man is the loss of his job, often through conditions beyond his control; and if there can be found some scheme which will ensure work to willing hands, we shall have gone a long way towards solving the principal problem of the worker and, at the same time bring about tranquil conditions in the industrial field. I can imagine no more progressive and useful step than that which will have for its object this achievement. Imagine, if you can, the peace and happiness which would illumine the whole industrial field if every worker could go to his daily task with the knowledge that his employment is secure, his wife and children ensured from want, and his wages sufficient to permit the enjoyment of essentials and some of the luxuries of life which make it worth living. This perhaps, paints a Utopian picture, but it would bring to us those great blessings to which even nations aspire—the blessings of peace, happiness and contentment.

In the railway field, much employment has been seasonal, and much in the past has depended upon the financial position of railway enterprises. Unfortunately, we have seen times of great prosperity when insufficient labor could be found to carry on the railway industry, and, again, we have seen signs of depression when many shops have been closed and a host of hands denied their daily livelihood. The railway industry, perhaps more than any other, depends upon the loyal support and good will of its vast army of employees. This form of industrial activity employs probably more men per unit of output than any other and most of the time a large percentage of its employees are beyond the supervision of the superintendent and the eyes of the foremen. Much must be left to the honesty and loyalty of the employee. A railway is a narrow ribbon stretching for miles and miles through the country, and therein it differs from a shop or factory whose men are constantly under the eye of managerial supervision where laxity is immediately visible. No one man or set of men can themselves operate a railway with efficiency; unless there is the day-by-day support and loyalty from the employees, failure is bound to appear. Therefore, in such enterprises, the most valuable asset which can be achieved is the good will not only of officers, but also of all the employees down to the humblest crossing watchman.

Union-management cooperation in the railway industry seeks to achieve as a primary objective continuity of employment, and in the accomplishment of this objective it is destined to play a great and useful part. It has already been applied to shop work and if successful there, as I have no doubt it will be, I can see no reason why it should not be equally applied to other branches of the railway industry.

I want to take advantage of this opportunity to congratulate and to thank Mr. Bert M. Jewell, President of the Railway Employees Department of the American Federation of Labor, and his associates, for the valuable contributions which they have made in this direction and for the voluntary gesture of cooperation which they have extended to the railway managements. It is reassuring, and it is an eloquent testimonial of the high-minded spirit which animates those who direct the affairs of trade unionism. I, for one, accept that gesture with all that goes with it.

On the Canadian National Railway System we are definitely and irrevocably committed to the principle of cooperation with our employees. The experiment in shop cooperation, upon which we have lately embarked, carries with it thus far much promise for the future. We propose to move steadily forward, hand in hand, shoulder to shoulder, with the leaders of this movement, and we have an abiding faith in its ultimate advantage to both the railway and its vast army of employees.

WHEN the American Federation of Labor recently announced its new wage policy, the question arose as to whether the Atlantic City pronouncement was only a gesture of polite interest in the new science of industry which is being ushered in by recent developments in superpower, labor saving machinery, and improved industrial processes. Some believed that organized labor was not yet converted to the doctrines against which it had fought for so many years under the leadership of the late President Gompers.

But when President Green of the Federation appeared last month before the members of the Taylor Society and delivered an address on labor's contribution to the new science of industry, it was convincing proof of the genuineness of organized labor's interest in this vital problem. Not so very long ago the appearance of the President of the A. F. of L. at a meeting of the Taylor Society would have been unthinkable. The attitude of President Green is proof that the Federation is going to carry out in definite action the wage policy expressed at the Atlantic City Convention. Already a committee representing labor is being formed to cooperate with management in a study of waste in production. All this indicates that slowly but surely a new spirit of cooperation between capital and labor is expressing itself. We consider this attitude of labor one of the most helpful signs in the present industrial situation.—*Babson's Reports, Business Supplement, January,* 1926.

Management of Automotive Service[1]

The Story of an Effort to Develop Standardization and Control in a Jobbing Industry

By T. L. PREBLE
Regional Service Manager, White Motor Company

THE automotive industry, one of our largest and perhaps our most spectacular industry, is the fruit of many centuries of effort to perfect self-propelled highway vehicles. Several centuries before Christ the Athenians, beginning to realize the value of mechanical development, constructed vehicles operated by a mechanism whose motive power was supplied by slaves. In the fifteenth century A. D. an Italian developed a wind-propelled highway vehicle.

During the period 1820-40 vehicles propelled by steam were manufactured with fair success in England, but met with very considerable opposition on the part of farmers, stock breeders and others interested directly or indirectly in horse-drawn vehicles. As a result of this opposition, legislative obstacles were set up which very seriously hampered further development.

In 1896 a department store of Providence, R. I. requested an engineering firm to build for them what is said to have been the first motor truck in the United States. A number of other concerns took similar action shortly thereafter. This equipment was purchased, however, more for its advertising value than for its utility in highway transportation.

With the exception of furnishing an occasional set of shoes and a bag of oats for old Dobbin, there was no real service problem, comparable to that which exists at the present time in the automotive industry, until the development of the internal combustion engine. Motor vehicles are expensive, quick wearing machines, and their servicing, of necessity, constitutes a very important consideration.

While this discussion of service will be confined more particularly to the field of commercial motor vehicles, the fundamentals and management problems to be dealt with apply, with but few exceptions, to the servicing of all types of motor vehicles. It is therefore appropriate at this time to present certain salient statistics bearing upon the size and scope of automotive service in general.

Over 20,000,000 motor vehicles are registered in the United States, comprising roughly 83 per cent of all registrations in the world. The tremendous task of servicing these 20,000,000 motor vehicles is divided between about 37,000 service stations maintained by car dealers and 31,000 independent service stations, a total of 68,000 repair shops in this country alone, the average number of vehicles per shop exceeding 280. Over 350,000 repair shop employees comprise the mechanical force needed to service these motor vehicles. Thus the servicing of automobiles and commercial vehicles is in itself an industry of no mean proportions.

The word "service," a much misused term by the way, has so wide a variety of application as to necessitate, for the purpose of this discussion, a limiting definition. In an analysis of service, using the term in its application to the marketing of manufactured products, without special reference to the automotive industry, Ralph Starr Butler wrote:

> Service may mean a continuing interest in the customer after he has bought the goods. It may mean helpfulness preceding the sale, with the purpose of fitting the product definitely to the customer's needs. It may mean offering to the customer assistance and information on matters only indirectly connected with the seller's goods.

This definition of service will suffice for present purposes. The obvious aim of automotive service maintained by manufacturers or dealers is that of facilitating and promoting the sale of the product.

The nature of the automotive industry, its comparative newness and its phenomenally rapid expansion have necessitated the development of a technique of service different in many respects and more highly specialized than service formerly accorded to mechanical products. Automotive service is, in fact, an infant industry.

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[1] Paper presented at a meeting of the New York Metropolitan Section of the Taylor Society, January 21, 1926.

The application of scientific methods to production and to engineering have been frequently commented upon, as has the necessity for such scientific approach to the general problem of distribution. It is to be hoped that this discussion will at least serve to indicate that service, an important element in distribution, is taking a step in the right direction.

While I realize that many of you have no personal interest in the automotive industry, I believe that certain factors to be touched upon will find their analogy in other industries.

Status of Service in the Field of Distribution

Service is organized with the end in view of enhancing the value of the customer's investment by prolonging the profitable life of the product. Service is aimed toward the development of added good will. The old principle of *caveat emptor,* "let the buyer beware," has no place in the automotive industry. Well organized service in this industry is an absolutely indispensable adjunct to a sound marketing program. It is a very important factor in the customer's investigation of *what* to buy.

While in the earlier days of the industry service was looked upon as merely a "necessary evil," progressive manufacturers are fast approaching a more complete realization of its far reaching possibilities. The modern conception of service is positive rather than negative. It classifies service as a *business force,* akin to sales and to advertising, rather than as a necessary evil to be grudgingly tolerated.

The service organizations of a motor vehicle manufacturer must cope with the horns of a dilemma. On the one hand, if it is to justify its existence completely, it must result in enhancing the value of the product to the owner by assisting him to reduce operation and maintenance costs to a minimum; this means that service charges to the owner must be reasonable. On the other hand, if the industry is to be properly stabilized, the service function must be self-supporting. By proper organization service can attain both objectives.

Specific Functions of Service

The old idea of service has been and in some places still is merely that of maintaining at convenient locations repair shops and parts stocks for the convenience of owners. While of course this constitutes the necessary basis of automotive field service, it by no means represents all that can be done by one service organization in facilitating the sale of the product.

The specific functions of service may be classified as:

1. The manufacture and distribution of parts;
2. Mechanical repair work;
3. Direct cooperation with the Sales Department;
4. Direct cooperation with owners and prospects;
5. Cooperation with the manufacturing organization with the object of improvement of product, and of assistance in the important problem of suiting the product to customers' requirements.

These functions relate more particularly to the service organizations of factory branches or dealers, independent garages not being particularly concerned as a rule with direct cooperation with sales, customers, or factory.

Organization of Service

The organization of service to execute these functions properly must, of course, be divided into two phases, namely, home office and field. The home office service organization of the progressive manufacturer must in addition to its regular line duties of supply, of coordination, and of executive control, include a well developed staff division for the study and improvement of various elements of the business, a number of which I shall shortly enumerate. Intelligent staff work has already accomplished much by way of elimination of old causes of customer complaint. In the search for the "one best way" with respect to tool equipment, methods, administrative routines, and minor policies, a good staff organization is indispensable.

The field service organization must, of course, be closely coordinated not only with the home office organization but also with the sales department. The exercise by the home office of a functional type of control over the field organization units has proved beneficial when not carried to an excess,—such control facilitating the installation of improved methods and serving to insure a higher degree of uniformity.

In this connection it is obvious that the manufacturer who distributes his product through branch office organizations, or branch offices plus distributors and dealers, is better enabled to achieve the highest and most uniform quality of service to the customer than the manufacturer who relies solely upon dealers in his marketing program.

Some Management Problems

The balance of this discussion will be devoted to a brief resume of certain of the more important problems with which the manufacturer is confronted in his endeavor to execute the several functions of service to the best advantage of the customer and of himself. In their enumeration, these problems will be placed in their proper classification under the five major functions of service which I have already touched upon.

Manufacture and Distribution of Parts

In regard to the function of manufacturing and distributing of parts, a problem of great importance and no little complexity, particularly to the large manufacturer producing a fairly wide variety of models, it may be said that the development of scientific methods for anticipating parts requirements is of first importance. A proper analysis of parts mortality, aside from obvious benefits to the purchasing and production departments, paves the way for prompt service to the owner, thereby assuring to him a minimum of idle machine time, a factor of tremendous importance.

In addition, such analysis permits of the maintenance of well balanced inventories in the field, assuring to the branch office or dealer a reasonable profit on sales, and to the fleet owner the carrying of a minimum investment in spare parts stock. A third, and by no means negligible, advantage lies in the evidence thus presented to the manufacturer of the frequency of parts failure, which facilitates product improvement.

Another important factor in parts manufacture is found in the necessity of obtaining the highest possible degree of interchangeability. Selectivity, as opposed to interchangeability, inevitably results in added maintenance cost to the owner, and extra expense to branch or dealer, because of increased parts inventories and of extra labor involved in repair operations.

A third parts problem, confronting all the larger motor vehicle manufacturers, consists in the necessity of safeguarding the owner against the added maintenance burden imposed by his purchase of non-genuine parts. Competition by non-genuine parts manufacturers, most of whom can compete only by the production of parts of inferior quality, is best coped with by the maintenance of price schedules as low as adherence to standard quality will permit, and by a well organized and efficient machinery of distribution, assuring prompt service to the owner.

Mechanical Repair Work

It may be stated briefly that the function of mechanical repair work has as its primary object rendering to the owner quick work, well done, and at a cost as low as adherence to highest quality will permit, thus insuring a minimum of idle vehicle hours and of maintenance expense.

The necessity for work well done and for low cost is obvious. The importance of quick work is well illustrated, for example, by the effect of undue delay upon the individual truck owner whose sole income is derived from his truck; if the owner's income from his vehicle is $30.00 a day and a complete day is necessary to effect certain repairs, it is obvious that the tie-up of his truck will seriously affect his earning capacity. Similarly, in the case of the fleet owner whose motor equipment is utilized for the hauling of his own products, unnecessary idle vehicle time naturally results in the necessity for increasing his motor equipment investment.

In carrying out this objective the automotive industry is confronted with the highly involved problem of *repair operation standardization*, a problem which is now receiving the study which for many years was chiefly reserved for production. The two problems have much in common; and the following quotations concerning production problems are applicable to the service problem.

> Two fundamental principles of cheap production lie hidden away amongst inefficient shop processes, bewildering disorder of shop conditions, and lax, inaccurate, and utterly misleading shop methods.
>
> 1. The determination of a "standard time" for each job and its tabulation, introduction and enforcement.
> 2. The absolute elimination from the workman's routine of every duty but that of running his machine continuously and efficiently. (Carpenter.)

> No record can, as a rule, be kept of men doing miscellaneous work unless it is properly planned ahead of time with that object in view. If it is intelligently planned, an improvement will result which will far more than pay for the expense of planning and record keeping. (Gantt.)

> The main trouble with the majority of departments operating chiefly by manual labor is the lack of correctly determined standards of every move. (Parkhurst.)

In discussing the complex problem of ship repairs, W. B. Ferguson enumerated as difficulties attending cost estimating:

1. Extent and nature of repairs unknown in detail until the work is under way; that is, before estimate is made;
2. Accessibility of the work, whether in the shop or in the field; work may be overhead, or in closed-in or cramped places;
3. Complexity and difficulty of the work compared to some assumed standard condition;
4. Continuity or contiguity of the units which comprise the operation, the amount of shifting of tools or position of the workman which is required.

Motor vehicle repairs involve very similar circumstances and conditions.

The problem of standardization is now receiving the attention, by progressive manufacturers, which it so well deserves, and its successful solution is attended by many worth-while results. Such standardization permits a more efficient control of job delivery promises, of quality, of waste, and of cost to the owner. It results in better material control and in ability to requisition parts, tools and materials in advance of workmen's needs. It eliminates excessive lost motion. Its ultimate development permits the payment of higher wages because of lower costs, and assists in attaining steadier and more assured volume of repair business.

In regard to material control, for example, referring to the supplying of parts and materials to the shop for installation during repair work, it should be possible through proper standardization to pre-requisition better than 85 per cent of all items necessary, the result naturally being that of reducing mechanic idle time spent at the requisition or delivery windows. Such pre-requisitioning will ordinarily effect a saving of upwards of thirty minutes per mechanic per day, which labor time would otherwise be charged out to customers.

With reference to waste, the setting up of proper standards results in reducing to a minimum the needless renewal of parts, proper salvage standards clearly indicating whether old parts should be utilized or scrapped. Loss due to spoilage and breakage is similarly reduced to a minimum.

Such standardization allows the repair shop to deal with its customers on a more businesslike basis, making it possible to guarantee not only quality but specified delivery time and definite cost as well.

There are four methods of dealing with customers with regard to cost: the ordinary method of charging in accordance with actual time and material consumed; the approximate estimate; the maximum estimate; and the so-called flat rate or fixed price. The latter two methods are obviously preferable in that they involve giving the owner a definite quotation in advance of any expenditure on his part.

Another problem confronting the repair shop results from the constant and violent fluctuation of business to which shops, large and small, are subjected. These fluctuations make more difficult the attainment of the ultimate goal of every large repair shop, a complete production basis. This burden, particularly difficult for the smaller shop, is made easier by the provision of "fill-in" work wherever possible, such as used car repairs, and by such control and scheduling of incoming work as can properly be exercised.

The increasingly important stress which is being placed, more particularly by owners of commercial vehicles, upon continuous service and upon the necessity for reduction of vehicle inventory by increase of vehicle hours on the job, is being met in a number of ways, night service and unit replacement being two important methods. Organized night service, a difficult problem, but one which can be solved successfully nevertheless, carries an advantage to the repair shop as well as to the customer in that it permits a more continuous use of building equipment, involving, where any considerable volume can be maintained, a worth while reduction in overhead expense.

Unit replacement, where the actual repair of the unit involved consumes considerably more time than is taken by a mere exchange of a rebuilt unit for the worn unit, is bound to lessen considerably the total time of the vehicle spent in the shop. Referring again to the example of the individual truck owner, it is obvious that if the repair of a certain unit on his vehicle can be accomplished by the simple process of installing a completely rebuilt unit (billing him only for the repairs of the unit he turns in) he has been materially benefited by the increased productive time thereby secured for his truck.

Such procedures as night service and unit replacement serve to illustrate the fact that the manufacturer of commercial automotive equipment must sell more than merely the mechanical product which he produces; the necessary point of view must be that of selling motor transportation.

In the organization and operation of the most up-to-date repair shops, more and more attention is being given to the problem of customer contact. It is recognized by service managers that a repair shop has not only a mechanical function; it has also a business function,—that of creating good will, of lessening sales resistance, and of producing at the same time a satisfactory profit and loss statement. Quick service, well done, at low cost, must be supplemented by a careful cultivation of what might be termed organized customer contact.

There exists the necessity of training service men in personality and courtesy, and of instructing them in the maintenance and operating problems confronting owners, in order that they may more effectively cope with the broader aspects of their job. Many service stations employ what are called "service salesmen," not only to act as a clearing house between customer and shop when the vehicle comes to the service station but also to visit owners in their own places of business to extend desirable assistance on operation and maintenance problems.

Such owner contact, properly organized in a genuine spirit of helpfulness, is bound to result in added good will. It is, in a sense, a form of sales engineering. Such contact is of great assistance to the repair shop in maintaining a high volume of business. Organized personal contact, backed up by a proper analysis of what may be termed the repair market, enables the service manager to feel the pulse of his boss, the customer, and is invaluable to the manager who measures his results from the proper perspective. Last but not least, properly developed owner contact permits the repair shop to check its efficiency by detailed customer complaint analysis, both quantitative and qualitative.

Suitable records should be maintained in order that the Service Manager may be at all times completely posted as to the status of his department with the owners he serves or should serve. Such records are not only necessary in order to determine the effectiveness of his contact with owners, but are also useful to him in planning his repair sales quotas and his corresponding expense budgets.

Direct Cooperation with Sales Department

With regard to the third major function of service, direct cooperation with the sales department (this function not applying, of course, to the independent garage), it is obvious that the previous two fundamentals, namely, manufacture and distribution of parts, and mechanical repair work, are, if properly executed, *indirect* cooperation of the highest type. There exist, however, certain important elements of the service job which constitute *direct* sales department cooperation.

The matter of organized customer contact has already been touched upon from the standpoint of the repair shop. This same contact of service personnel with owners is, if properly carried out, productive of worth-while results to the sales department. Because of the nature and purpose of the service man's call, his entree to the customer is often easier than that of the salesman. He has no cause to fear that malady which so frequently oppresses salesmen, known in trade circles as the "hot door knob." The service man has only cooperation to sell. His visit often paves the way for the salesman. Furthermore, his contact with the owner's operating and maintenance personnel, whom he meets on their own ground, is often by the very nature of his experience and training more effective than the solicitation of such personnel by salesmen; and the opinion of the owner's maintenance man, or his driver, is no small factor in the owner's analysis of what to buy.

Customer contact by service men provides the sales department with important information relative to customers' maintenance costs, operating conditions, sentiment toward the product and many other facts important to carefully planned sales solicitation. Such contact, furthermore, results in the discovery of additional sales prospects. In short, it is of great assistance in reinforcing the efforts of individual salesmen and in the whole proposition of sales planning and execution.

The service man used for contact work should possess, in addition to a thorough mechanical and motor transportation experience, the requisite alertness, courtesy, personality and ability to follow through to enable him to deal with owners under trying conditions. In addition to cooperation with owners in the solution of their problems, he must, of course, spend much of his time with the owner who brings his truck to the service station for repairs, and whose frame of mind is by no means friendly. Repairs are ordinarily chargeable to expense—not capital—and the selling of a repair bill is sometimes more difficult than the selling of the product itself. Truly the service salesman needs a sense of humor!

It is only by the employment of personnel of this type that automotive service will be able to eradicate the bad name which has followed it like a gloomy shadow; it is this type of service man who can lend real cooperation to the efforts of the sales department.

Another element of direct cooperation with sales lies in the technical assistance which must be furnished in the problem of meeting customers' requirements, and in the avoidance of overselling. The occasional unfamiliarity of salesman with the technical and the mechanical phases of the business may at times lead him to deliver to the purchaser the wrong transportation unit or his desire for extra commission may in certain instances result in his selling a model larger and more expensive than requirements demand. Absolute coordination of Sales and Service is necessary to insure against overselling.

In addition, an alert service department is of no little use to the sales organization in general market analysis with a view to anticipation of future expansion of service facilities in line with sales expectations. The establishment of such facilities in advance of passing need is often excellent business policy.

It is an essential principle of management that sales and service must be closely coordinated and governed by the same underlying policies.

Direct Cooperation with Owners and Prospects

In discussing the previously mentioned functions of service it has been impossible to avoid mention of certain factors involved in direct cooperation with owners. As in the case of cooperation with the sales department it is obvious that the proper handling of parts distribution and mechanical repair work is the basis of owner cooperation. There are, however, certain possibilities for helpfulness which can best be described as *direct* cooperation, their aim being that of extending to owners the benefit of the experience and facilities of the manufacturer or dealer in various problems of the customers' own establishment.

Certain of the more important factors of such cooperation may be summarized as—

1. Providing trained operating and maintenance personnel;
2. Training owners' personnel;
3. Furnishing technical information;
4. Assistance on problems of tools and methods in the owner's plant;
5. Assistance in stockroom organization and in proper balancing of spare parts inventories;
6. Assistance in analysis of operation and maintenance costs and in elimination of causes of excess. In this connection, it has been estimated that something like 70 per cent of all maintenance expense on motor vehicles results from lack of proper attention on the part of the owner in the tightening of loose nuts and bolts, etc., and in the highly important matter of periodical lubrication as specified by the manufacturer.

The proper exercise of this function by trained service personnel is obviously of mutual benefit to owner and manufacturer alike.

Cooperation with Factory

The fifth and last service function, that of direct cooperation with the factory, has, as I have said before, the dual object of improvement of product and assistance in the all important problem of *what to make* so as best to fulfill customers' requirements. In both instances the basis of cooperation is that of furnishing prompt, complete and accurate data from actual field experience.

Such reports, constituting a definitely formulated routine procedure on the part of the manufacturer, are of extremely valuable assistance to the home office. Engineering and production departments fortified by a true picture of actual field results will avoid many a pitfall. The requirements of the service department as to simplicity, accessibility and reduction of models to a reasonable minimum are necessarily reflections of the requirements of the owner, and a proper statistical expression of such essentials make for lower costs and satisfied customers.

Conclusion

Summarizing this brief discussion, I have attempted to review some of the more important aspects of automotive service, describing roughly its status in the field of distribution, its specific functions, its organization and some of its problems of management.

Service, this "infant industry," is emerging from its swaddling clothes and is fast becoming a real personality in the automotive family.

With the approach of comparative saturation of the market and of increasingly severe competition, service will many times be the deciding factor between success and failure.

The company whose service results in the greatest enhancement of the investment value of the product will possess a superior competitive weapon.

The intelligent, progressive manufacturer will *not* look upon service as a necessary evil,—for the right kind of service will make sales.

Discussion

H. R. Cobleigh.[2] To my regret, I cannot take exception to any of the statements in Mr. Preble's paper, for discussion is always more interesting, or at any rate more exciting, when there are two sides to the question.

A few years ago much of Mr. Preble's presentation might have been regarded as theoretical, and therefore open to debate, but today no one well informed on the subject would challenge any of his statements. About all that seems left for me to do is to stress or amplify some parts.

The commonest meaning of the word "service," though not in dictionary language, is "doing something for somebody," and that, broadly, is the sense in which it is used in the automotive industry. More explicitly "automotive service is attention to purchasers of motor vehicles after the sale."

Unfortunately many car owners think service means "something for nothing." We do have what we call free service or "warranty service" for which no charge is made during the first three months of use of the vehicle and some owners do not distinguish between this and service for which they should pay.

As some sage has remarked, "you can't get something for nothing in this world, and darned little for a dollar." Free service is always paid for sometime, somewhere, somehow, by somebody and generally in advance, being covered in the car price and so divided among all purchasers. Reasonable people realize that it is better for everyone to pay his own share when and as necessary.

I would not buy my shoes where they promised to resole them free because I would know that I paid for it when I bought them, instead of not until I needed new soles, and further that, if I wore out my soles slower than the average, I would be paying more than my share.

When the public as a whole becomes educated to the "pay-as-you-get-it" service, it will have no other. Some think it will hasten that day if we discontinue the use of the word "service" because that is so generally taken to imply something for which there will be no charge, and substitute the term "maintenance."

Personally I should rather reform the interpretation of the word than to discard it for one which indicates a wrong conception of our job. Maintenance cannot mean more than taking care of cars, whereas service, righly comprehended, is taking care of car owners. Properly repairing a car is, after all, only the means to the end of pleasing the customer; hence, however good the work, if we displease him in any other way, we have failed.

There are three things that are essential to any business, and automotive service *is* a business; it should be merchandised just as any more tangible commodity. These three essentials are—ability, honesty and courtesy—and they are equally important, although this discussion will be confined to the first.

Suffice it to say for the other two that honesty in service requires true diagnosis of troubles, keeping of promises and fair prices. Courtesy includes prompt attention to customers, sympathetic treatment of complaints and the manifold little things that please.

The ability part involves three "M's"—men, methods and materials. The personnel should be adequate and competent—one of our greatest problems—for the demand for men has ever been ahead of the supply. The industry is just now initiating a comprehensive plan for mechanic training, centering in a standard course which all automobile schools will be asked to adopt. Those doing so will have the cooperation of the industry in providing technical information and laboratory material and in placing of graduates. And in the technical training the executive side is not neglected.

Many of the larger factories have, for some time, engaged in educational work for their field men and several have very creditable schools.

For seven years the National Automobile Chamber of Commerce has held semi-annual meetings for service men, originally limited to factory service managers. Now one meeting each year is a joint meeting with the Society of Automotive Engineers and the other a field meeting to which all in automotive service work are invited. For two years the latter has been augmented by an Automotive Maintenance Equipment Show with over a hundred exhibitors.

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[2] Secretary of Service, National Automobile Chamber of Commerce, New York.

Methods have been so fully covered in Mr. Preble's paper that this heading may be passed with a summary. There are systems for parts stocking, inspection and distribution; instructions and standard times for repair operations; cost accounting; standard charges to customers (flat-rate system); piece work payment of mechanics; periodic inspection of owners' cars; following up work done to see that it satisfies; reports to the factory of chronic troubles to guide future design; etc.

Materials include both replacement parts and the tools and shop equipment with which they are installed. The parts subject also has been quite thoroughly treated by Mr. Preble.

The factory's concern is owner satisfaction for the sake of the car reputation; hence all repair shops—dealer's or independent—are encouraged to use "genuine" parts, meaning the same as original equipment, and discounts are being adjusted to favor their use. The factories keenly oppose the use of inferior parts because it hurts the owners as well as themselves.

Standard or branded parts (those sold under their own trade name) offer legitimate competition if they equal the original parts in quality, i.e. analysis, heat treatment and dimensional tolerances, and may be of instant advantage to the purchaser because of quicker delivery or better price.

The disadvantage to the car owner is that this loss of business to the car factories compels them to divide their parts distributing cost over a smaller volume made up more largely of the slower moving parts, hence increasing the cost, to the car owner, of those parts for which the car factory is the only source.

A discussion of repair shop equipment deserves an evening in itself. The greatest waste in maintenance is the excessive labor bill, most of which is a consequence of inadequate equipment. Only 48 per cent of our repair shops are machine-tool equipped. Fortunately, however, these shops do 75 per cent of the work. But that does not say that all of these have sufficient equipment. The trouble is that most of the repair shops have an insufficient volume of work to justify much of an installation; that is why the 52 per cent have only hand tools.

It is the machinery and methods used in production which make possible the present low price of new cars. Prices are lower now than ever before in the history of the industry. No article of manufacture has been quicker to get back to prewar levels. If cars were built as they are repaired they would cost four or five times as much as they do. Conversely if they could be serviced as they are built, maintenance costs could be reduced to a quarter of what they are now. This, no doubt, is a theoretical ideal, impossible of attainment, but certainly there is vast room for improvement.

From factory to distributor, to dealer and to purchaser, is a constantly thinning out process of car density, comparable to the arterial system of the human body. If it were possible to have a venous system for the automobile body politic to re-collect cars for repair work, it would warrant labor-saving machinery and methods that would cut the cost of the work tremendously.

Sending cars back to the factory for repairs is precluded by the transportation costs and time loss, but it is not inconceivable that one of the developments of the future will be a carefully spotted distribution of factory-type repair shops that will handle all the major repairs on all makes of cars and trucks within a practicable driving radius. Minor repairs and adjustments would continue to be cared for by dealers and independent repair shops and garages.

Metropolitan districts have a volume of work that will support fair-size and well-equipped service stations and, generally speaking, reasonably good service, as judged by present standards, is to be had in such sections, although admittedly there is still considerable room for improvement in city service.

However, 60 per cent of our motor vehicles are in towns of less than 5000 population. Add to this the fact that the nation's annual maintenance bill is six billion dollars, or three times as much as is spent in the purchase of cars, and it will readily be granted that there is an attractive field here for the best efforts of engineers and management experts in devising time- and labor-saving methods and equipment for reducing repair costs.

Production and distribution have thus far had the bulk of attention and have reached such high standards in this country that they are the marvel of the world. By comparison maintenance has been sadly neglected. While very creditable advances have been made in the past five or six years, perfection is still so far ahead that we must admit that we have not passed the kindergarten stage.

Charles P. Staubach.[3] Mr. Preble's paper is certainly complete, exhaustive and enlightening.

The suggestion that I comment upon it was no doubt made in view of the fact that manufacturers of engines of accuracy for use in the office have, to an extent, the same service to render from the standpoint of necessity of prompt response and effective work at reasonable cost.

In the office machinery field, "Station" repairs are confined to machines considerably damaged by accident or rebuilding operations on machines of some age to prolong their normal lives. Perhaps as high as 95 per cent of all sales and mechanical service is rendered in the user's office.

This fact makes necessary a very careful selection of personnel in the manning of an office equipment service organization. The service man must not only be qualified from a mechanical standpoint, but must also have the tact and diplomacy necessary to form a mutually advantageous contact with the customer. Today, one of the requirements in an applicant, for instance, is at least a high school education.

The wide distribution of our machines creates a problem that is not found to the same extent in automotive service. Nearly 30 per cent of the working hours of our service men is spent in traveling—reaching the equipment. This accounts for constant effort to find methods of reducing traveling time. One is the use of automobiles by our inspectors; another, the creation of resident points in cities other than those in which service stations are located, as fast as an area in and about the smaller cities can be set aside, based on a certain average machine population.

Referring to Mr. Preble's mention of the twofold object of automotive service—to enhance the value of the product to the owner by the reduction of operating and maintenance cost and to stabilize the industry by maintaining a self-supporting service—we feel that we have attained both objectives.

We feel also that our service arm is fulfilling the five specific functions set up by Mr. Preble: parts manufacture and distribution; mechanical repairs; sales cooperation; owner and prospect cooperation; and finally, cooperation with the factory to improve the product and assist in suiting the product to the requirements of the user.

Our service department orders to the factory are based on quantities used over the most recent six months period. We use the caliper or tendency plan, in which each month we pick up an additional month and drop one at the other end of our experience record. Distribution takes into consideration the stocking of repair parts in our field service station through a controlling high and low system, the high mark being usually a three months' supply.

Time hardly permits any extended description of the many methods in use in connection with repair work, and direct cooperation with the sales departments, owners and prospects, beyond stating that we have experimented with sales and service departments separated from each other on account of the cost of rental space, with the result that we are willing to have our sales offices away from congested business locations, if necessary, rather than to lose the many advantages of close service and sales contact for the benefit both of ourselves and our users.

As to improvements in the product, our service organization includes a mechanical research department at the factory which analyzes every inspector's report covering his daily service calls from a copy which is forwarded to the factory for scrutiny; this has resulted in many refinements and improvements.

As to "organization of service," Mr. Preble's ideas are most comprehensive. With us, our Home Office Service Department is fully manned by individuals having had actual field service experience as inspectors and as service chiefs in charge of field stations. Their work is so divided as to insure specialization on each phase of the work by one or more individuals.

The Home Office force is supported by a staff of ten traveling mechanical instructors, who spend two-thirds of their time in the field, teaching service men the newer phases of construction and reviewing fundamentals with them and the other third in the different factory departments, gleaning information to be used on the next trip.

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[3] Agent at Newark, N. J., of the Burroughs Adding Machine Company of Detroit, Michigan.

In addition to this contact field force, the division heads of the department are in the field fully 20 per cent of their time in order to remain familiar with field activities and problems and to know changing conditions.

It may not be amiss to explain at this point, that unlike the automotive plan in extensive use, as I understand it, our service is fully financed by the company and not at any point in the field by the local agent or manager. General control of policies is also in the hands of the company, the stations operating along well established and understood policies, under the general supervision but not the dictation of the local manager.

Our service operation is highly standardized in its entirety, including such items, for instance, as shop layouts, territorial working conditions, selection of men, training methods, equipment and working methods. Everything is furnished to all field units and they are operated indentically.

Mr. Preble's reference, as a problem, to constant and violent fluctuations of business, making a complete production basis difficult, can be characterized as the problem of "peaks" and "valleys" in available work to be done. This we have solved by offering our users what we call the maintenance agreement plan, which provides for regular inspections of the equipment at certain intervals, aside from special calls for emergency service.

Through this plan, which a large proportion of our owners utilize at a flat annual rate, payable semi-annually, based on the style and equipment of machines and on proximity to or distance from service stations only to the extent of a provincial and city classification, we are able to keep larger service forces in our different field units to take care of peak load emergency activity, dovetailing this with regular inspections. So the men are always busy and yet always available for emergencies. The plan is immensely advantageous to the company, and especially to the user, to whom "Burroughs Service" is an emblem of efficiency and satisfaction.

As to personality, courtesy and ability to handle owners' maintenance and operating problems—as a requirement to be made of service men—we are of the opinion that all our service men must be service salesmen, and this involves all these attributes.

We have a service sales quota, established by the department at the Home Office for each service unit. This quota is based on the approximate operating cost of the station, established through past experience. The quota plan produces an effort and a result on the part of the field men that is impressive. Quotas are fairly high but for the past four years our service operation, country wide, has averaged 102 per cent of the quota.

Coming, finally, to what Mr. Preble terms the third major function of service, direct cooperation with the sales department, this hits me where I live, as I have no direct financial interest in the operation of my service station, but depend on sales results as to financial benefits.

I have no salesman, sales specialist, or office assistant with whom my conferences are more frequent or contact more close than with my Chief Inspector. Moreover, the information that I receive from the rank and file of the service force is valuable and often more accurate than that received from assistant or junior salesmen.

The contact of the service man with the user and the user's office force is often closer than that of the average salesman and in many cases, regarding the condition of machines actually in use in the establishment and the desirability of replacement, the user values the opinion of the inspector above that of the salesman.

I agree absolutely with the points of advantage to the selling force obtainable through the many kinds of service contact with the user and the user's establishment which Mr. Preble has named. Sales cooperation is, truly, in the hands of properly trained service men. Nor need this be all one-sided. The salesmen should be trained to appreciate the high quality of service rendered, to refer to the service force in the highest terms in conversation with the owner and prospect, and to further the sale of the maintenance contract idea, which directly benefits the service force.

I do not know that I have covered the ground expected of me, but at least I believe that I have been able to convince you of my personal interest, as a manager of sales and supervisor of all branch activities, in that most important adjunct, the service department; and what it can be made to mean to the company, the agent, the salesman and above all, to the user of the product, in an organization which takes pride in its customers' satisfaction.

The Women's Industrial Conference

Washington, D. C., January 18 to 21

THE employment of women has a broader significance to the nation than purely industrial problems," said President Coolidge in a letter of greeting to the Women's Industrial Conference, composed of 291 delegates from 243 organizations, including the Taylor Society, who met in Washington, D. C., January 18 to 21, on call of the Women's Bureau of the Department of Labor. "It is a social problem, and as such it needs the attention and interest of the country as a whole. Women can never escape the responsibility of home and children, and the working woman as a mother and potential mother challenges universal interest." Though "society necessarily looks to the management of industry as mainly responsible for the conduct of industry," nevertheless women's work concerns everybody because of their relation to homes and children.

This theme—the effect of women's employment on their children—was elaborated in the address of the Secretary of Labor, James J. Davis, who, speaking on Women Workers and the American Home, enumerated the strains of modern industry, "with its clattering equipment, with its use of substances dangerous to health, with its high-speed machinery, its demand for rapid production," and called for more adequate measures to improve these conditions. "We are apt to overlook the one most important factor," he said, "the welfare of those who come after us."

At the other extreme from these views were the vociferous demands of the delegates of the National Woman's Party for "equal opportunity" for women as individuals, not as potential mothers, and, as a means to equality with men, the elimination of all labor laws which do not apply to men as well as women. Standing between them was the group of 27 women representing trade unions, the large majority of whom have themselves worked in factories. They brought to the conference the firm foundation of practical experience. They, too, desired equal opportunity, but they were also in favor of laws to shorten hours, prohibit night work, and improve working conditions as a reenforcement of the efforts of trade unions.

These cross-currents of opinion, treated in the public press as a "newsy" conflict between women, were the distinctive characteristic of the conference, though the votes showed that an overwhelming majority of delegates stood with the group of women in industry in their views on labor legislation. The outcome was a request to the Women's Bureau to make a comprehensive study of special laws now regulating the employment of women and the effect of these laws.

The reason for the conflict and, by implication, a suggestion for a way out through a more comprehensive view was given by Miss Mary Anderson, director of the Women's Bureau, in her opening remarks, when she said, "In the working woman are focussed some of the most fundamental industrial issues. To employers, she is a factor in their labor supply. To feminists, she is a factor in the woman question. To labor, she is a critical element in the complex labor struggle. Too often each of these groups tries to settle each issue in its own way, and with reference to no other interest but its own. These problems cannot be justly or successfully dealt with either as woman's problem alone, or as labor problems alone, but must be recognized as involving the elements of both, in a combination which makes them uniquely difficult. They must be approached, therefore, not on the basis of theory alone, but with knowledge of economic facts and a balanced sense of the values at stake, especially the human values to the woman worker herself and to society as a whole."

To give opportunity for this kind of balanced approach the conference was called, in order "to bring before the women of the country current facts about women in industry, to make possible an interchange of experience and ideas between employers, workers, and the general public, and to develop policies for broader opportunity and more profitable employment for women under modern industrial conditions." All three groups were represented among both delegates and speakers. Each of the six sessions, excluding the opening night and the final dinner, was devoted to a specific though comprehensive group of problems, including the Development and Expansion of Industry, in the light of its social significance for the employer, the worker, and society; Problems of Industrial Relations; Social Problems; Health Problems; and a Symposium, extending over two sessions, assigning responsibility to the Woman Wage-earner, the Consumer, Business, the Church, the

State Government, and the National Government. On motion of the trade union women, who believed it just that a hearing should be given to the opponents of labor legislation for women, an extra evening session was arranged for a discussion of the necessity for labor laws, with an equal number of speakers from each side.

In the session on Health Problems, new hazards to women in industry were described by Dr. Alice Hamilton, Professor of Industrial Medicine in Harvard Medical School. "Since the war there has been a great change in the solvents which are used in industry," she said. "This means that we have a new situation in rubber factories and in factories using varnish, lacquer, shellac, and all other coatings. . . . It is still true that the poisonous trades in the United States employ a very much larger number of men than of women and that the latter are rarely exposed to as great a degree as are the men. But it is also true that the number of women subject to the danger of industrial poisoning is much greater than it was before the war."

Dr. Hamilton cited slight improvements in the lead trades in the past eight years but pointed out that much remained to be done, notably in the pottery trade where the protection given to the workers is less adequate in the United States than in Great Britain, Holland, or Germany.

William Green, president of the American Federation of Labor, stated that the Federation is developing a united effort of national and international unions for the better organization of women in trade unions. The unions, he said, are capable of "expansion for cooperation between workers and management in working out better methods and economies in production." But lacking organization, "Women workers have been an exploited group," and "it is evident we must rely upon legislation to safeguard a considerable proportion of these workers."

The share of employers in improvements already made in conditions of work for women might have been described by the President of the National Association of Manufacturers, John E. Edgerton. Unfortunately his choice of the dangers of communism as his main theme left enlightened management in the United States without a spokesman. "I have offered no expert or other pert testimony on specific problems," said he, "preferring rather to point out and identify the remote sources of most of these problems, believing that the quickest and easiest solution to all of them is to quarantine against foreign influences, particularly Russian." He warned the delegates that one Madame Kollantai, hitherto apparently quite unknown to any delegate, was "exercising a very large if not a dominating influence upon at least some of the major activities of at least some of your organizations."

The need of a balance of power between employer and employee in adjusting human relationships was emphasized by Agnes Nestor, delegate of the International Glove Workers' Union. "Trying to adjust human relationships in industry is beyond the power of any one employer to deal with by himself; he is too human and too much a partisan in the bargain he is trying to make . . . The affairs in the shop are often referred to as the employer's business; it is, so far as the ownership of the industry is concerned, but it is much beyond that; it is one party giving employment, and the other party selling his or her labor and skill. It then passes into the realm of affairs of two important parties to a bargain for the conduct of production in industry; for the employer it means producing products for sale on the market, and for the worker it affects his very life. What he shall earn and the hours he shall work determine his standard of living and whether he shall have health and leisure to enjoy life. The human welfare of large groups of individuals is too precious to be trusted in the hands of any one individual, no matter how well meaning he may be. Industry has grown beyond individual dealing. The employer has become removed from his individual workman so that collective action is needed. In our complicated industrial life of today it is the only intelligent way to meet the problem of industrial relations."

William Leiserson, speaking on the Philosophy of Industrial Relations, traced the progress of study of labor questions from abstract speculation on "the labor problem" to detailed analysis of specific labor problems, and the shift in interest from conditions —particularly evils and abuses—to the relationships between employers, wage-earners, and public communities. Attention now is directed toward developing "methods by which these industrial relations may be organized, administered, and kept in adjustment to the advantage of all concerned. If we are to view labor relations not primarily as reformers, or wage-earners, or employers, or public officials, but as scientists and philosophers, we must begin with a disinterested investigation of the aims, purposes, and points of view of the parties to the relationship."

How democratic control over the community can be given to the workers in a southern mill village despite the tradition of paternalistic control by mill owners, was described by Henry P. Kendall. Women in Congress and several holding positions of importance in federal and state governments were, also, speakers on the program. Experiments in reducing hours without decreasing production were described by Miss Frances Perkins. An incident which signified women's increasing participation in industrial policies was the news during the conference that Governor Smith had appointed Miss Perkins chairman of the Industrial Board of the New York State Department of Labor.

The resolution providing for an investigation of labor laws for women was introduced by delegates of the National Woman's Party, but the conference overwhelmingly rejected an important and irrelevant clause in the original motion, which would have had the effect of asking the Women's Bureau to withhold conclusions on the subject of labor laws for women which are adverse to the so-called Equal Rights Amendment to the Federal Constitution advocated by the National Woman's Party. The amended resolution asked the Women's Bureau to make "a comprehensive investigation of all the special laws regulating the employment of women, to determine their effects," and further requested the formation of an Advisory Committee "with whom the Director will take counsel concerning the scope of the investigation; and that the personnel of such committee include equal representation of both sides of the controversy over special legislation for women."

Thus the aftermath of the conference will provide one more test of fact-finding as a means of resolving conflicts. Doubtless members of the Taylor Society, particularly those employing women in their plants, will be asked to contribute facts to this inquiry.

LILLIAN M. GILBRETH
PAULINE GOLDMARK
MARY VAN KLEECK
Delegates of the Taylor Society

Book Reviews

What the Coal Commission Found. Edited by Edward E. Hunt, F. G. Tryon, and Joseph H. Willits. Williams and Wilkins Co., Baltimore, 1925, pages 416.

After the expenditure of some $600,000 for a diagnosis of the ills of the coal industry, the public doubtless expected to be told, finally and definitely, what is the matter with the industry, who is responsible for its troubles, and what should be done about them.

To say that the Coal Commission very largely disappointed the public in this expectation is a criticism in a limited degree only. The Commission undertook the exploration of a dark continent of vast extent. It collected detailed information and found a bewildering multitude of facts on many phases of the coal industry but neglected to set aside sufficient time to digest and interpret the facts collected.

Consequently the work of the Commission is inconclusive. Not that it should have located blame for conditions in some one spot, but that it should have given us a clearer distinction between symptoms and disease. For instance in the bituminous industry a great outstanding fact is over-development. The Commission, of course, did not neglect the subject, but it did not make sufficiently clear what were its causes and the remedy for it.

Some months after the expiration of the Commission's life, members of the staff decided that the public should be given the benefit, without further delay, of what had been done. They undertook to embody within the covers of a single volume the more significant portions of the staff reports and to give them as much unity as was possible under the circumstances.

Because most of the material which furnished the basis for the text was addressed to the Commission rather than to the public, it is somewhat too detailed to be easy or interesting to the general reader. One is constantly impressed with the painstaking and workmanlike character of the statistical work, which is the backbone of most of the studies, but disappointed at the lack of their finality and conclusiveness. The original purpose of the reports is the explanation.

The recommendations of the Commission, which constitute Part III, impress the reader not as having been arrived at by a close analytical study of the staff reports, but as having been somewhat hastily formulated against time and pressing public necessities.

Possibly undue prominence, quantitatively at least, is given to the commercial and the labor aspects of the coal problem. Problems of internal management, and particularly production methods, with reference especially to underground conditions are subordinated. Nevertheless, a keen analyst would doubtless find much that is suggestive. On subjects of costs, margins and profits, labor rates and earnings, living conditions among mine workers, and wholesale and retail distribution, the book has opened up to the student of the industry a vast amount of valuable material. In fact, it is the close student of the industry rather than the casual reader who will find the book useful.

The personal side of the industry is well portrayed by means of numerous excellent illustrations, principally of phases of mine life. It is not without significance that the volume is one of a "Human Relations Series."

The statistical matter is strengthened by the copious use of excellent graphs.

The general form and typography and the evident craftsmanship which went into the making of the physical book are not only above criticism but call for special congratulations to the publisher.

H. S. Gilbertson[1]

Health Maintenance in Industry. By J. D. Hackett,[2] A. W. Shaw Co., Chicago, 1925, pages iii, 477.

In the words of the author, the object of this book is "to show those who manage plants, and are, therefore, responsible for the management of medical departments, how the workers' health may be maintained and improved as a means of increasing production." It accomplishes its object by presenting the subject of industrial medicine, in a very thorough and convincing manner, as an economic factor in industry.

Convincing facts are given to show that the medical department should share equal importance with other departments in industry. Its activities extend into every department. Not only should the head of the department be well trained in medical work as applied to industry, but he should be familiar with every step in the process of manufacture.

Emphasis is constantly placed upon the fact that the medical department is not a philanthropic enterprise carried on from sentiment but a business investment. It should show definite returns in increased production, decreased labor turnover, and in bettered feelings between employer and employed. The methods for obtaining good medical service in industry are outlined and accurately quoted figures are given to show the profits obtained by leading companies in this country as a result of such work.

The author lays no claim to having presented new material in the field of medicine as related to industry. He has gathered his facts carefully and has presented them in a clear, simple manner easily grasped by a non-medical executive. He points out the hazards of industry, and discusses specific hazards and the effects of industry on the general health of the worker. With reference to the greater morbidity and mortality found among workers as compared with the non-industrial population, he discusses possible causes, resultant decreased production and direct losses to industry as well as to workers, and the effect of successful operation of modern health departments in industry in reducing these losses.

The matter of organization and function of the medical department is discussed so as to give plant managers an idea of what should be done and how it should fit in with the rest of his organization. Every type of work is taken up with a careful review of the latest developments. Among the topics discussed are the medical and surgical work, hospital and dispensary services, hygienic and sanitary aspects of industry, proper equipment for meeting the needs of the workers.

While the therapeutic side of the work receives proper emphasis the author treats the entire subject from the larger viewpoint of prevention. The surgical work has been more highly developed in the past due to the necessity for meeting the emergency as it occurred. The more insidious losses due to minor illness have only recently been appreciated. These offer opportunity for constructive work in prevention. The author rightly feels that physical examinations on admission of the employee to industry with subsequent periodic examinations will go a great way to lessen time and production losses. Early treatment and correction of minor defects and illnesses, such as the common cold, will offer a great saving to employer and employee.

For the manager who thinks that his plant is better off without medical service, the book will show the many ways in which industrial medicine may give him healthier employees with greater contentment and less lost time from sickness, industrial disease and accidents. For the manager who already knows the value of such work as done by an established department, the book gives an excellent means for checking up the efficiency of that department. For medical workers in industry the book is of value as giving a review and compilation of the latest work in the field of industrial medicine. It should make an excellent reference book for all the above individuals.

While possibly a little lengthy for a busy executive it gives the gist of industrial medicine in non-technical form. The viewpoint is impartial from the standpoint of employer and employed. The author sounds a timely warning that certain conditions must be remedied voluntarily by the employer with profit or steps will soon be taken by state authorities to remedy them in a not altogether satisfactory manner. To managers in industry this book should appeal as giving an accurate account of what medicine offers industry.

William E. Brown, M.D.[3]

Employees' Representation in Steel Works. By Ben M. Selekman, Russell Sage Foundation, New York, 1924, pages 293.

As indicated by its sub-title this is a "study of the industrial representation plan of the Colorado Fuel and Iron Company." Like its companion volume by Mr. Selekman and Miss Mary Van Kleeck, describing the operation of an almost identical plan in the coal mines of the same company,[4] this is a report of an intensive, painstaking, field investigation conducted from November, 1919, to April

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[1] **Director of Personnel, The Lehigh Coal and Navigation Company, Lansford, Pa.**

[2] Consultant on Labor Relations, formerly Manager, Medical Department, Nichols Copper Company.

[3] The Industrial Health Conservancy Laboratories, Cincinnati, Ohio.

[4] Employees' Representation in Coal Mines, reviewed by the *Bulletin of the Taylor Society,* Vol. X, No. 3, June, 1925.